TABLE OF CONTENTS

SECTION	PAGE
1. APPLICATOR OVERVIEW	
Introduction	1-01
General Printer Specifications	1-02
Inventory List	1-03
Print & Apply Component Description	1-04
User Responsibility	1-05
Safety	1-05
2. SETUP AND OPERATION	
Web Routing	2-01
Thermal Print Head Label Loading	2-03
Thermal Ribbon Loading	2-03
Label Sensor Adjustment	2-03
Take Up Unit Assembly	2-04
Clutch Assembly Adjustment	2-05
Hand Held Labeler Interface **HLI-100**	2-06
Accessory Connections Control Box	2-07
T-50 Photo Eye	2-08
Air assist tube	2-09
T-150 Mounting Stand (optional)	2-10
T-stand adjustment	2-11
Tamp Unit Operation	2-12
Tamp Flow Control Adjustment	2-13
Optional Adjacent Panel Labeler (APL)	2-14
Optional Corner Wrap	2-15
Optional Side Winder Corner Wrap	2-16
3. CONTROL BOX	
Programming	3-01
Quick Reference Chart	3-05
Key Definitions	3-16
Set Up Of Key Features	3-17
Description of I/O	3-21
4. CLEANING & MAINTENANCE	
Troubleshooting	4-01
Fault Codes	4-02
Cleaning of the Print Head	4-03
Cleaning the Platen, Demand Plate and Rollers	4-03
Replacing the Print Head Power Fuse	4-03
Maintaining The Air Slide	4-04
Replacing Main Power Fuse	4-05

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SECTION 1

APPLICATOR OVERVIEW

Introduction	1-01
General Printer Specifications	1-02
Inventory List	1-03
Print & Apply Component Description	1-04
User Responsibility	1-05
Safety	1-05

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LABEL MILL 3510

THERMAL PRINTER/APPLICATOR SYSTEM

INTRODUCTION

The **Label-Mill 3510** is a state of the art THERMAL PRINTER & APPLICATOR SYSTEM created with maximum flexibility for your AUTOMATIC LABELING NEEDS. The unit will print and apply high quality labels and bar codes to your product at print speeds up to 18"/sec. and apply at speeds up to 90 labels/min.

OPERATION

The standard configuration is External Computer Mode. The configuration allows label formats to be sent to the standard Centronics Parallel Interface Port, Ethernet or serial port, on the Printer/Applicator. Once the format is downloaded to the Printer Job Buffer, the system 3510 can print and apply as normal. Standard industry label software packages can be used in conjunction with a PC to design and load label design.

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SPECIFICATIONS

PRINT SPEED	Up to 18"/second and approx. 90 labels/min. (Varies depending on label and product size.)
BAR CODES	UPC-A, UPC-E, EAN-8,EAN-13, Code 39, Int. 2 of 5, Code 128, MSI 2 of 5, UPC Bookland, and CODABAR.
BAR CODE RATIOS	1:2, 1:2.5, 1:3 or individually programmable bar code widths
HUMAN READABLE FONTS	Eight fonts including OCR-A and OCR-B representation and an outline font. American and European fonts. Upper case and lower case with decendors plus memory available for custom fonts.
LABEL ROLL CAPACITY	12" Max. outside diameter wound on a 3" diameter core. Die cut waste removed with a minimum of 1/8" separation between labels in running direction.
LABEL SIZE	Minimum: 1" wide x ¾" long Maximum: 7.2" wide x 14" long
MAXIMUM PRINT AREA	7.0" wide x 14" long
LABEL PLACEMENT ACCURACY	Up to + or - 1/32" (1mm) when labels are produced to specifications and product handling is controlled.
PRINTING METHOD	Thermal Transfer and Direct Thermal Print application method…Standard Tamp, Optional Blow On and Wipe On.
INTERFACE	Standard Centronics Parallel Port Standard RS-232C Serial Port, Ethernet port
INTERFACE SENSORS	Ribbon out Product Sensor-Photo Eye-Limit Switch PLC input
ELECTRICAL	115V AC/60 Hz-250 W idle, 600 W running.
AIR REQUIREMENT	80 p.s.i./3 cfm
SIZE	23" T x 30" W x 23-3/8" D
ENVIRONMENT	Operating Temp. 50-95 F (10-35 C) 15-85% RH. non-condensing
WEIGHT	60 lb. Nominal (with U-Arms)

*Options available

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INVENTORY LIST

QTY.	Description
1	Print & Apply Assembly
2	12-½" dia. Blue Plastic Spools w / Quick Release Collar
1	7-¾" dia. Blue Plastic Spool w / screws
2	½" - 13 bolts w / washers
1	Power Cord
1	Model 3510 Operators Manual
1	Extra Cardboard Ribbon Core
1	Product Switch (specified) a. Manual Limit Switch (optional) b. Photo Switch (optional)
1	Take-up Spool Clip

TOOLS REQUIRED FOR ASSEMBLY
:
3/32" ALLEN WRENCH
¾" WRENCH
1-1/8" WRENCH

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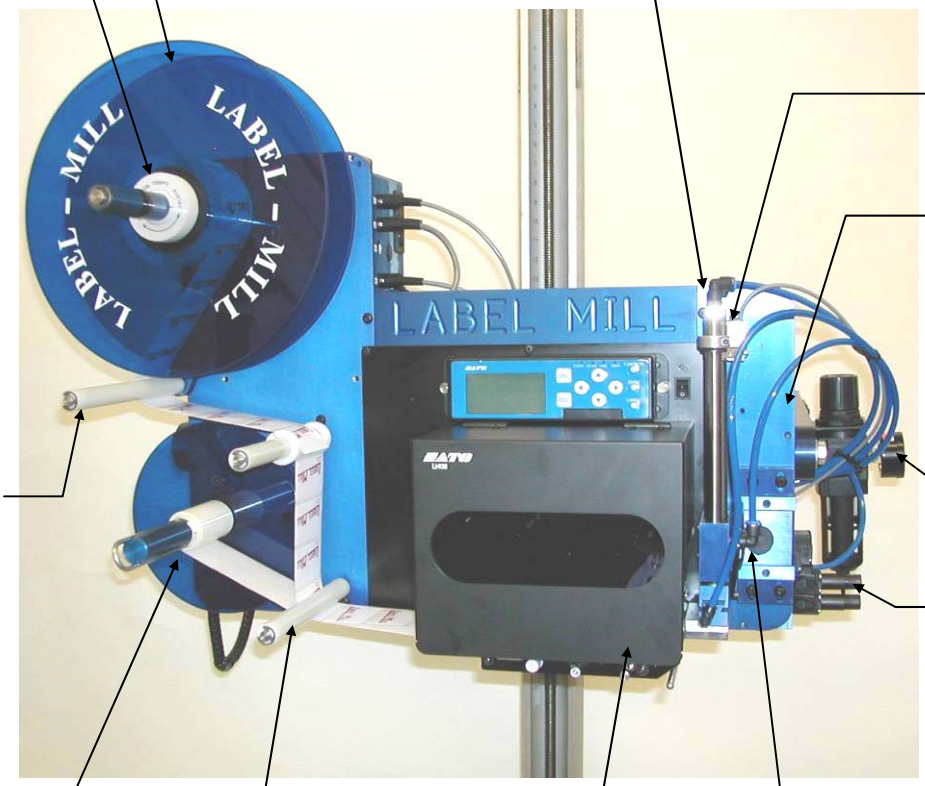
COMPONENT DESCRIPTION



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USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and / or inserts when installed, operated, maintained, and repaired in accordance with the instructions provided. This equipment must be checked periodically. Defective equipment should not be used. Parts that are broken, missing, plainly worn, distorted, or contaminated should be replaced immediately. Should such repair or replacement become necessary, we recommend that a request for service advice be made.

This equipment or any of its parts should not be altered without the prior written approval of MMI Automated Systems. The user of this equipment shall have the sole responsibility for any malfunctions which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than MMI Automated Systems or a service facility designated by MMI Automated Systems.

SAFETY

Only qualified personnel should use this equipment.
Before installing, inspecting or servicing equipment, turn OFF all power and air controls at the source and lock out in accordance with OSHA Standards.
Be sure all external electrically conductive parts are connected to a good electrical ground.
Never handle live electrical equipment with bare hands while standing in water, or while hands and feet are wet. Dangerous electrical shock can result.
Whenever the equipment is unattended, turn off all control and power supply switches.
Keep equipment clean and in good operating condition. Promptly repair or replace all worn or damaged hoses, cables or parts.
Do not make any repairs to equipment unless you are fully qualified.
This equipment contains fast moving parts, which may move without warning. Keep hands, loose hair and clothes clear of machines at all times.
Never place hands or any other body parts under the label platen at any time.
This equipment uses compressed air. Proper care and maintenance must be taken when handling compressed air and its components.
These precautions are further detailed and explained where specifically required in this manual.

⚠ WARNING

READ AND UNDERSTAND THESE INSTRUCTIONS

Protect yourself and others. Be sure this information is read and understood by all operators.

ELECTRICAL SHOCK CAN KILL!
Do not touch live electrical parts with bare skin or work with gloves or wet clothing.

NOISE CAN DAMAGE HEARING!
Wear proper ear protection.

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SECTION 2

SETUP AND OPERATION

Web Routing	2-01
Thermal Print Head Label Loading	2-03
Thermal Ribbon Loading	2-03
Label Sensor Adjustment	2-03
Take Up Unit Assembly	2-04
Clutch Assembly Adjustment	2-05
Hand Held Labeler Interface HLI-100	2-06
Accessory Connections Control Box	2-07
T-50 Photo Eye	2-08
Air assist tube	2-09
T-150 Mounting Stand (optional)	2-10
T-stand adjustment	2-11
Tamp Unit Operation	2-12
Tamp Flow Control Adjustment	2-13
Optional Adjacent Panel Labeler (APL)	2-14
Optional Corner Wrap	2-15
Optional Side Winder Corner Wrap	2-16

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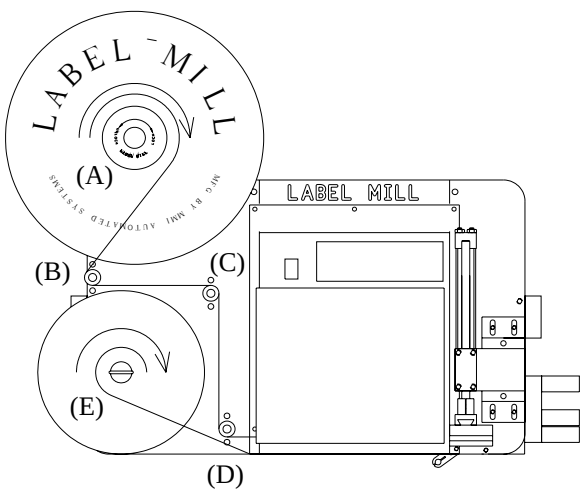
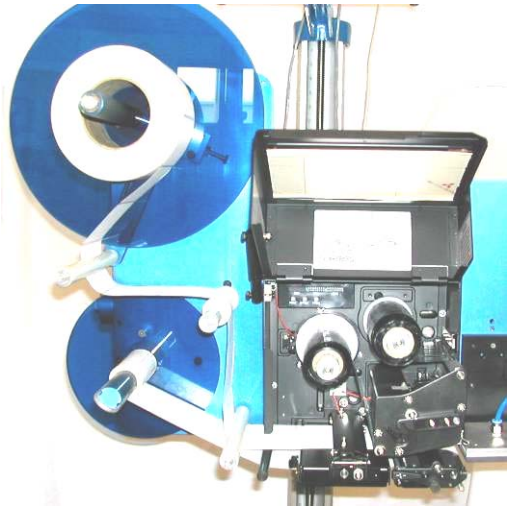
WEB ROUTING

Step	Operation
1	Load web onto label storage spool (A) so it unloads in a clockwise direction. (refer to pg. 2-2)
2	Feed the web to the left and below roller guide (B), to the right of roller (C) and to the left and below roller guide (D).
3	Feed the web into the thermal printer. (for a detailed description of thermal printer routing see page 2-3)
4	Finish the process by loading the waste backing paper onto the web take up spool (E). The take up spool rotates in a clockwise direction.
5	Adjust the (2) plastic web guide clips so the web is guided straight and even. Make sure clips do not bind the web.

*For a detailed illustration of this procedure, see Figure 2-1 below.

FIGURE 2-1





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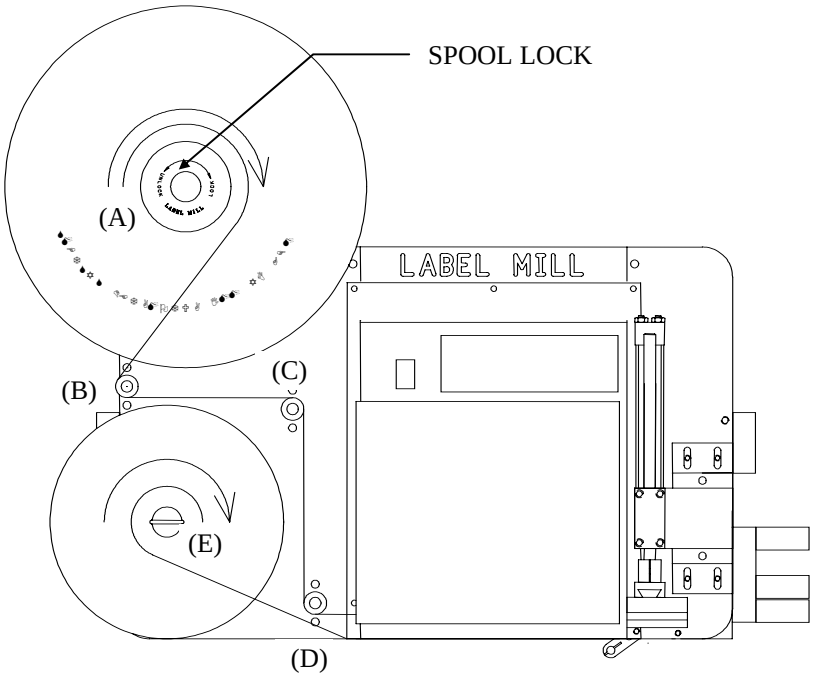
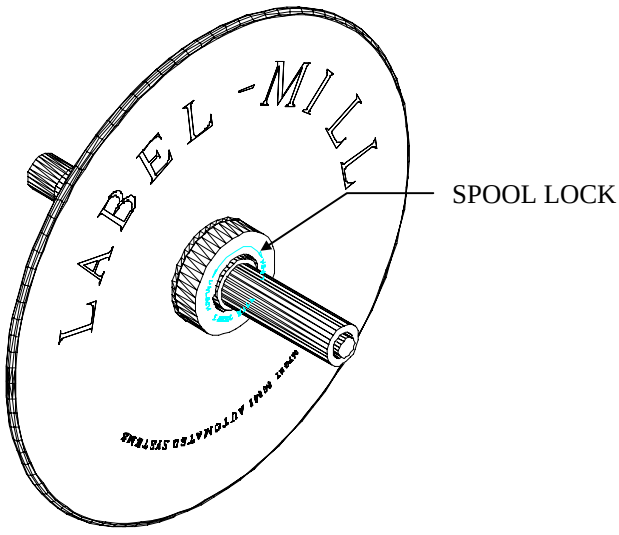
WEB ROUTING





SPOOL LOCK REMOVAL: To remove the label storage spool (A), turn the spool lock counterclockwise until you reach a stop. The spool will now slide off. To secure the spool, simply turn the spool lock clockwise until snug. DO NOT over tighten!

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LOADING THERMAL PRINT HEAD

REFER TO PRINTER MANUAL

LABEL & RIBBON ROUTING

REFER TO PRINTER MANUAL

THERMAL RIBBON LOADING

REFER TO PRINTER MANUAL

NOTE: The printer will not operate unless the front cover is in the fully closed position. For your continued safety, do not override the front cover interlock switch.

LABEL SENSOR ADJUSTMENT

REFER TO PRINTER MANUAL

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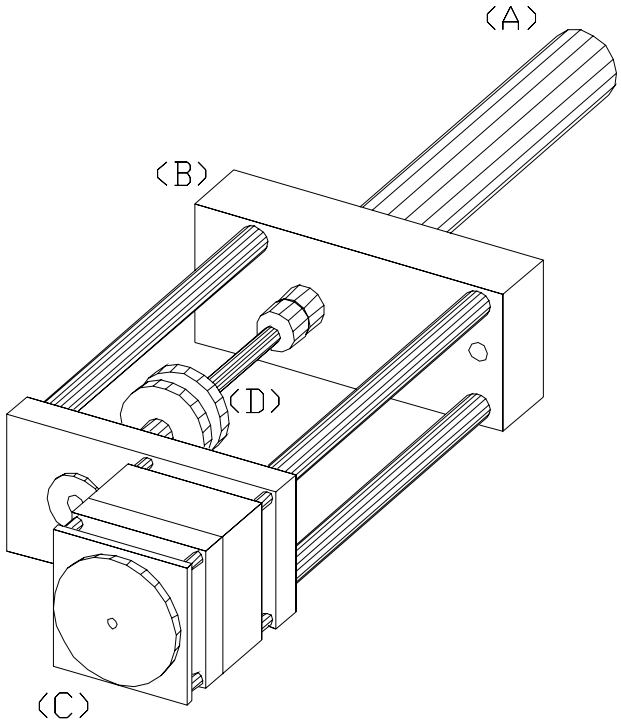
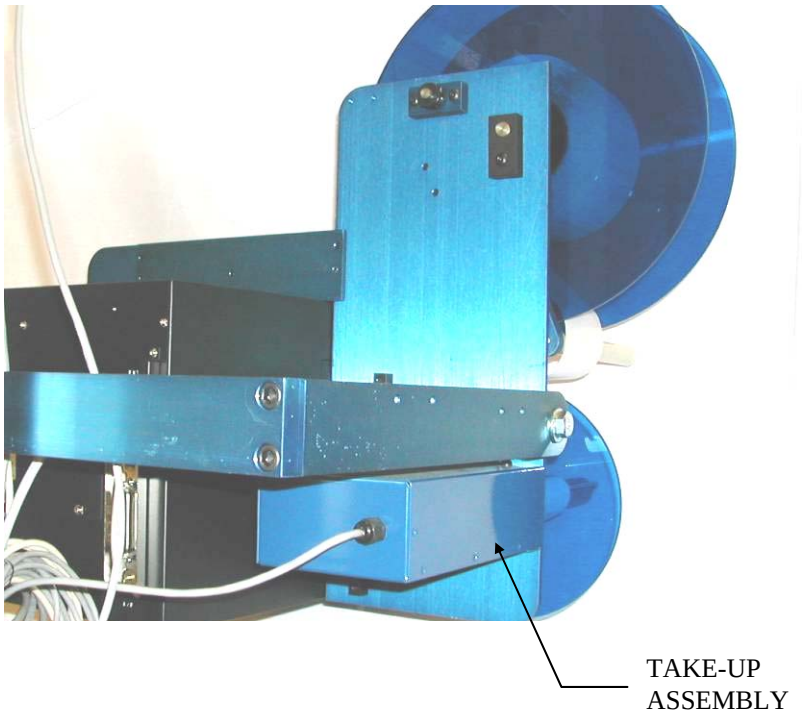
TAKE-UP UNIT ASSEMBLY

(A)...TAKE-UP SPOOL
(B)...BEARING BODY
(C)...GEAR MOTOR
(D)...CLUTCH ASSEMBLY





The Take-Up Assembly is located on the backside of the main panel. To adjust the clutch, the side panels must be removed to gain access. To remove the Clutch Assembly, you must first remove the Web Take-Up Spool. The mounting bolts for the Take-Up Assembly can be found directly behind the plastic spool.

WARNING!!! Be sure power is off before performing any service.

2-04

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CLUTCH ADJUSTMENT

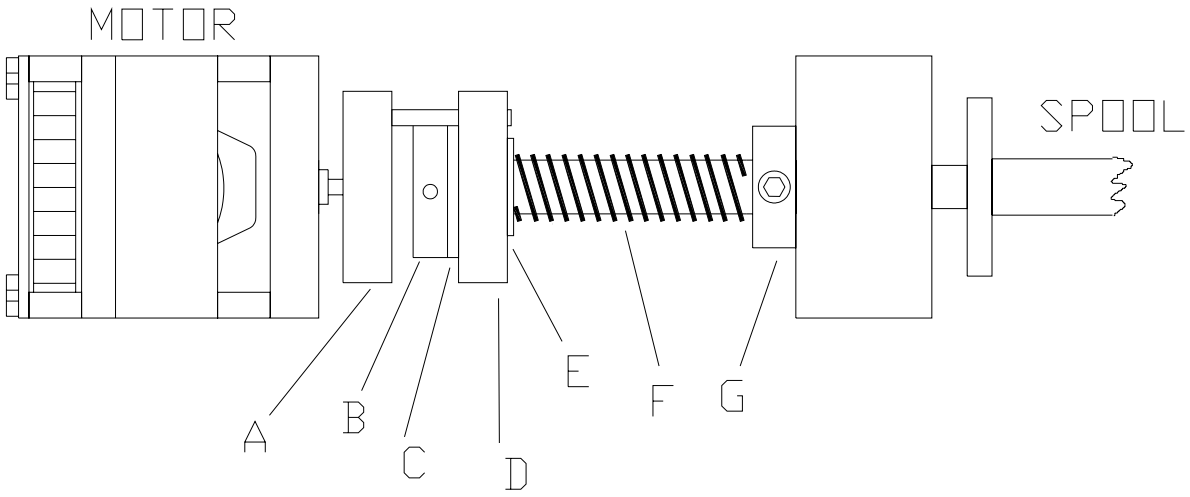

Figure 2-8

(A) DRIVE DOG
(B) SHAFT WHEEL
(C) FRICTION DISC
(D) PRESSURE PLATE
(E) THRUST BEARING
(F) PRESSURE SPRING
(G) TENSION ADJ. COLLAR

To increase waste web tension, move the shaft wheel (B) 1/32" toward the Spool. To reduce web tension, move the shaft wheel (B) 1/32" toward the motor.

CAUTION…Too much web tension may cause web breakage, print drifting, or premature failure of the Take-Up Assembly.

.

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HAND HELD LABELER INTERFACE
HLI-100

LCD DISPLAY

OPERATOR INTERFACE

INTERFACE PORT

2-06

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ACCESSORY CONNECTIONS

LOCATED ON BACK OF LABELER CONTROL ENCLOSURE

POWER PIG TAIL FOR PRINTER

MAIN POWER

FUSE

PREPRINT START

POWER SWITCH

START INPUT

TAKE-UP MOTOR

TAMP VALVE

LIGHT BAR / AUX CONNECTOR

DB-25 AUX I/O CONNECTOR

THERMAL PRINTER INTERFACE

START INPUT

CONVEYOR ENCODER INPUT

SERIAL INTERFACE TO HLI-100 HAND HELD

SERIAL PLUS PORT

TOUCH SCREEN

SERIAL PORT

EITHERN NET

2-07

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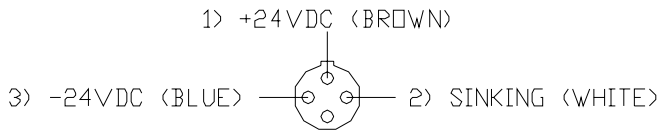
T-50 PHOTO EYE



CONNECTOR SHOWN FROM WIRE SIDE

2-08

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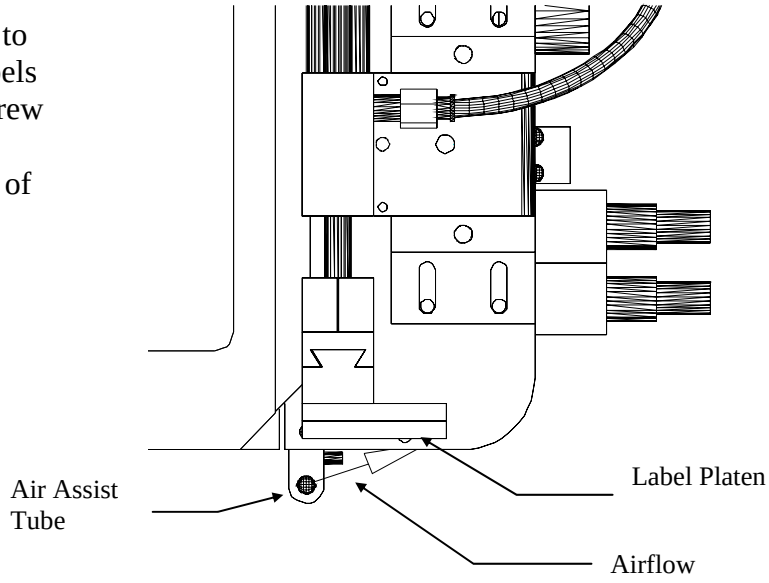
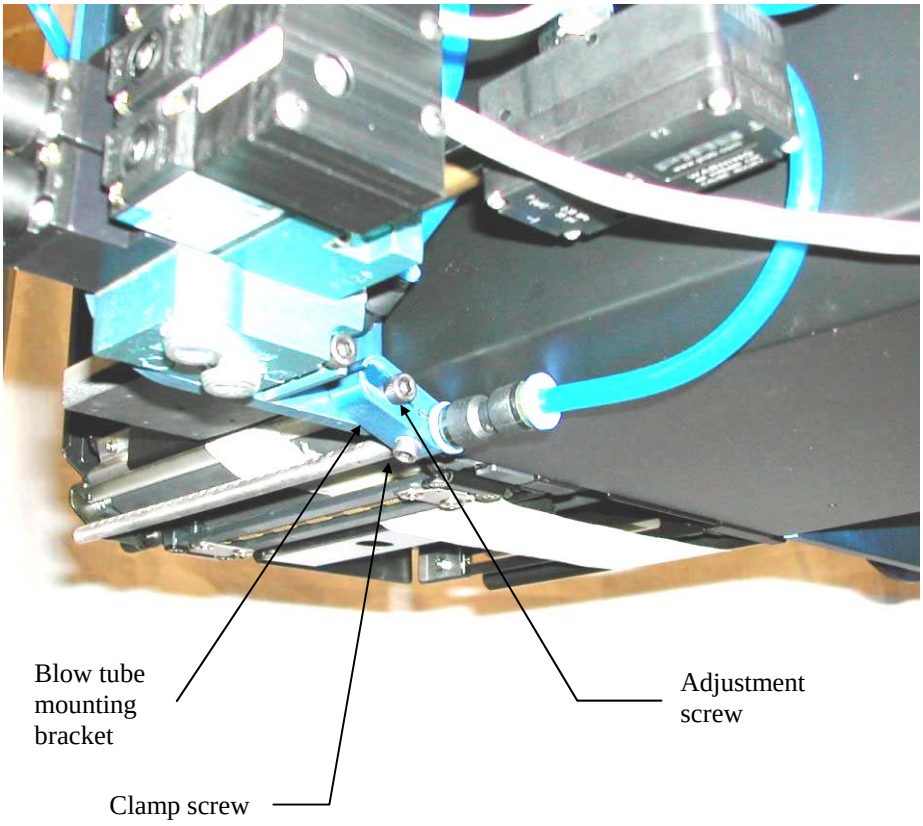
AIR ASSIST TUBE

The Air Assist Tube must be adjusted to clear the trailing edge of the printed labels and the Label Platen. An adjustment screw is used to adjust the position of the air holes in relation to the labels. An angle of 45 degrees is required.

One slot is provided to make the appropriate adjustments desired.

.





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OPTIONAL T-150 MOUNTING STAND

2-10

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T-STAND ADJUSTMENT

Column Crank

Column Lock

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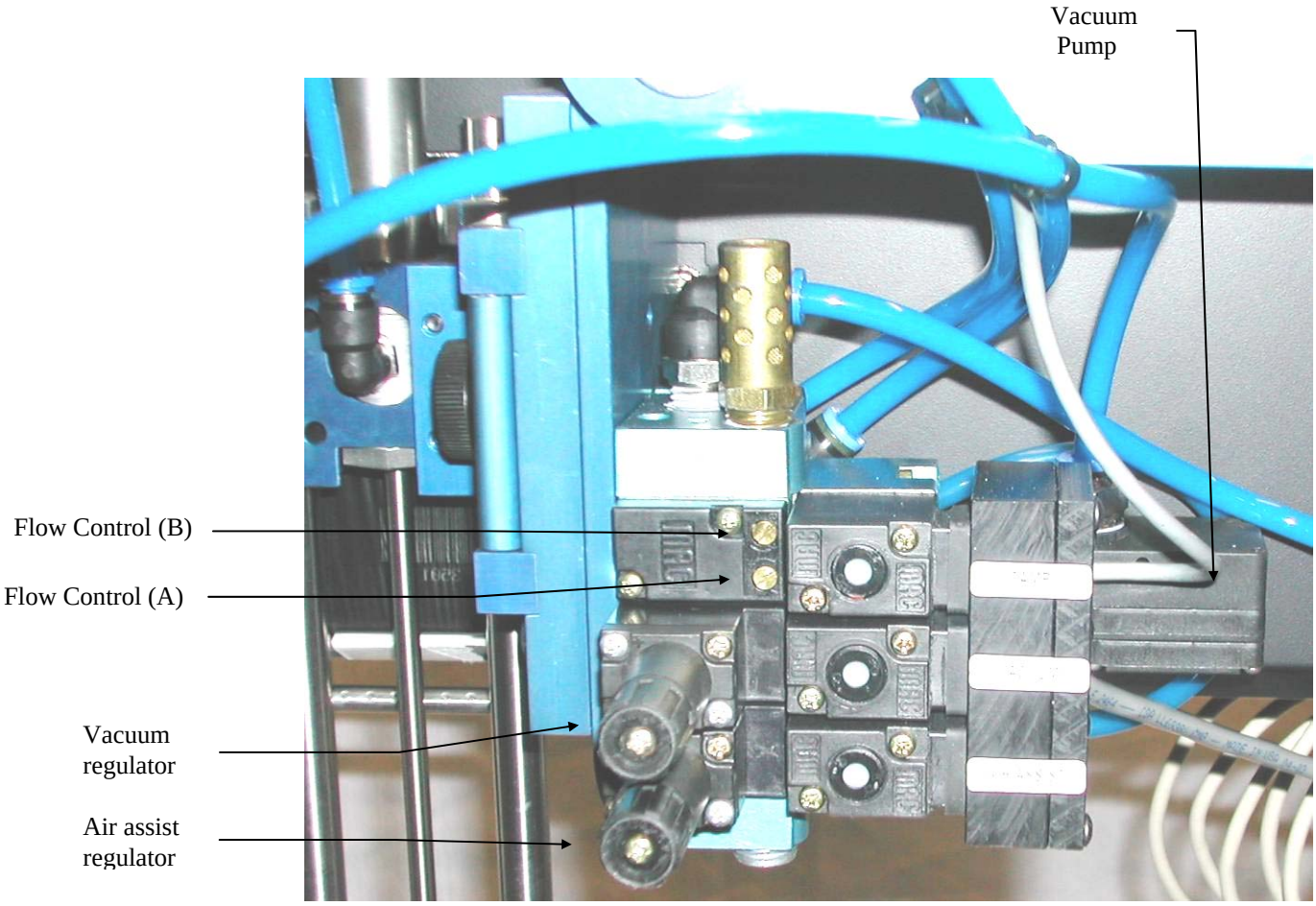
TAMP UNIT OPERATION

- Tamp Duration

  Tamp duration is used to provide an on timer for the solenoid valve on the main tamp cylinder. The delay on standard versions can be from 0 to 30.000 seconds in 1/1000 of a second accuracy. This allows for easy change over from one product height to another without physically changing the height of the unit. It also allows for precise adjustments of how close the tamp head comes to the product. (refer to page 3-08)

There is flow control adjustment for the valves. It may be necessary to adjust the flow rate on the tamp solenoid for optimum performance after installation. The adjustment is performed as shown below. They are set at the factory. The regulators on the vacuum, air assist, and flag valves are for increasing or decreasing the air pressure as necessary for proper operation. Note: Flag Regulator not shown below – only supplied with flag applicators.



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TAMP FLOW CONTROL ADJUSTMENT

Regulator Adjustment: **Clockwise** - Increase pressure **Counterclockwise** - Decrease pressure

MAIN AIR REGULATOR
Controls maximum air pressure available to entire applicator. Should be set between 40 and 80 PSI.

FLAG REGULATOR
The flag regulator is used to adjust the pressure that the flag jaws apply to the label as it is applied.

VACUUM REGULATOR (only used on the flag and tamp applicator system)
The vacuum regulator is used to control the vacuum that is used to hold the label to the flag jaws or the tamp pad.

AIR ASSIST REGULATOR
The air assist regulator is used to change the pressure that is applied to the blow tube. The blow tube is below the front edge of the peeler plate and is used to help "push" the label onto the bottom of the tamp pad or the flag jaws.

FLOW CONTROLS (tamp and flag applications)
Control A: This is used to adjust the pressure that controls the tamp cylinder in the upward direction.
Control B: Controls the tamp cylinder in the downward direction.

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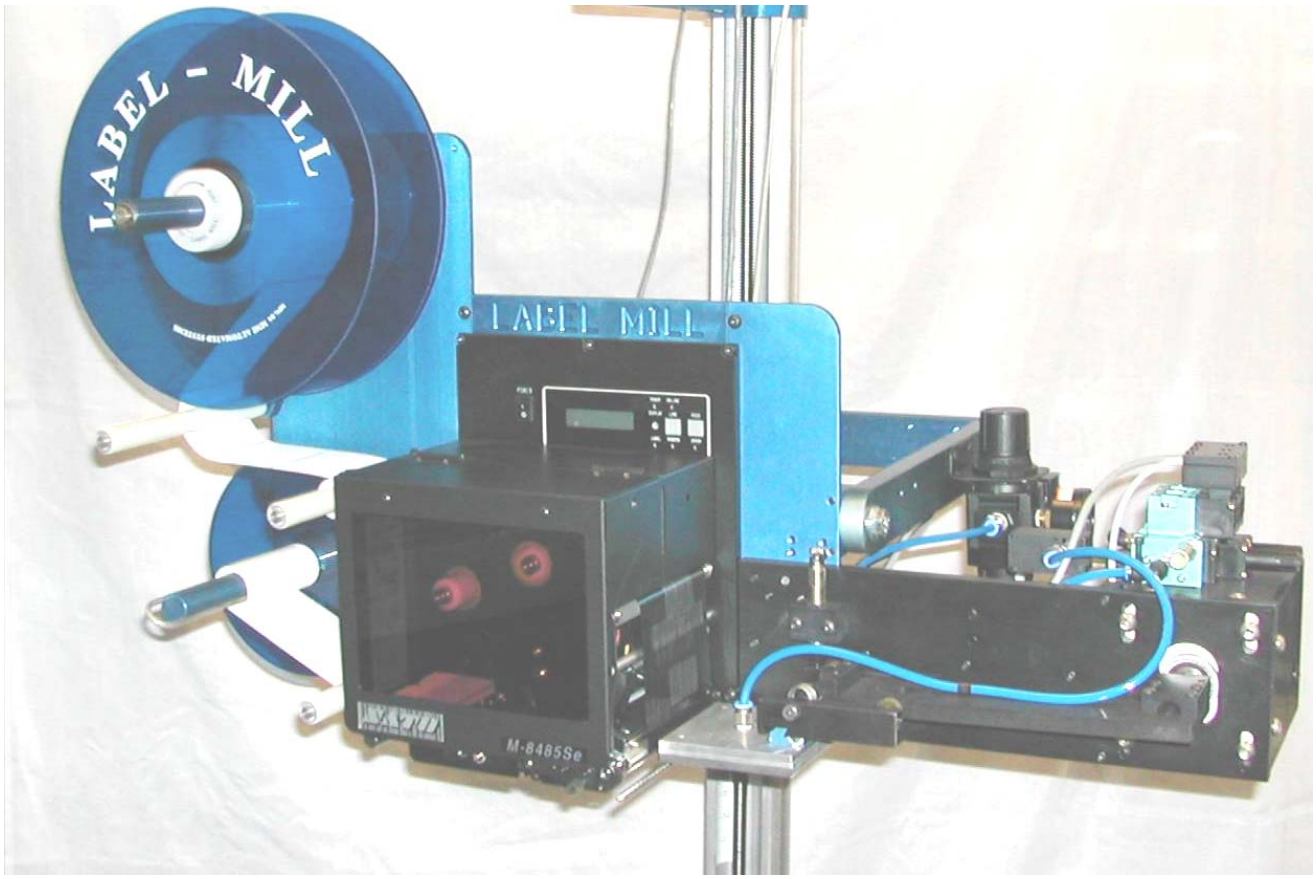
OPTIONAL ADJACENT PANEL LABELER (APL)



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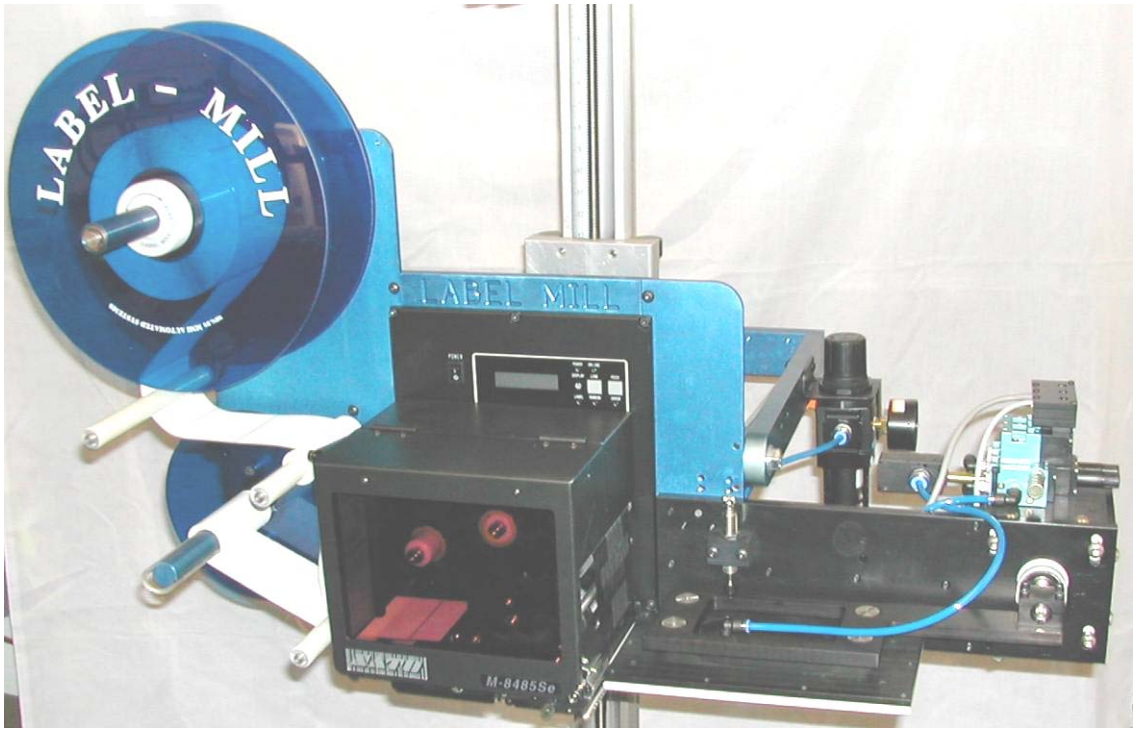
OPTIONAL CORNER WRAP



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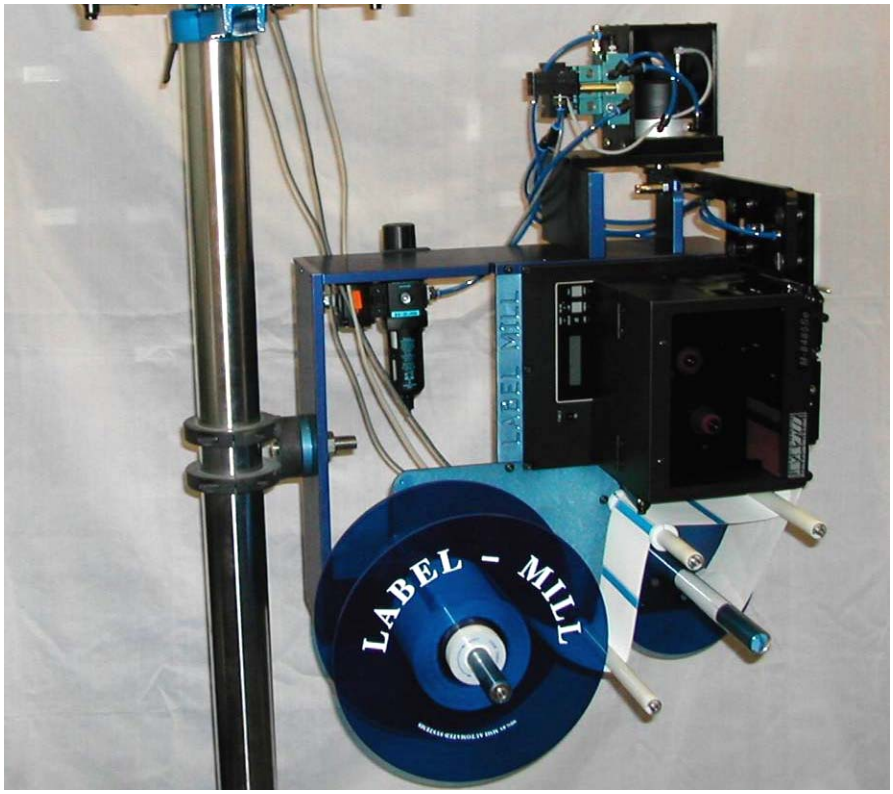
OPTIONAL SIDEWINDER



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SECTION 3

CONTROL BOX

Programming	3-01
Quick Reference Chart	3-05
Key Definitions	3-16
Set Up of Key Features & Quick Start	3-17
Description of I/O	3-25

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PROGRAMMING

All programming is performed via the **HLI-100** keypad and display as shown on page 2-6. All programmed settings are backed in nonvolatile memory and are not lost when the unit is powered off.

Upon power up of the control, the screen will display *MODEL NUMBER & REVISION* of the HLI-100 and then the *MODEL NUMBER & REVISION* of the labeler control. After this, the screen will now display the counter, *TOTAL XXXXXXX*.

- **KEY FUNCTIONS:**

"PROG" PROGRAM KEY IS USED TO:

1. **Enter and exit** the program menu.

"ENTER" KEY IS USED TO:

1. Access or "Enter" the selected "PROGRAM BLOCK". (example PRODUCT SENSOR or TAMP SETUP)
2. Access or "Enter" the ***data selection/options*** line (bottom line of display) of the "PROGRAM BLOCK" ***Sub Menus.***
3. Store the selected data.

UP / DOWN ARROW KEYS ARE USED TO:

1. Scroll up & down through the primary menu "PROGRAM BLOCKS" . (Header name)
2. Scroll ***sub menus*** inside of "PROGRAM BLOCKS". (top line of display while ***IN*** a "PROGRAM BLOCKS")
3. Increment and decrement programmable values.
4. Select different display views while in the "RUN" mode.

Left / Right ARROW KEYS ARE USED TO:

1. Move the "up carrot" left or right when programming a value.

START / ENABLE KEY:

1. Start key will initialize the application cycle.
2. Enable key will "Enable" the drive after it has been disabled.

CLEAR / STOP KEY:

1. Stop key will abort the cycle only when not in the program menu.
2. Clear key will delete stored values while in the edit mode.
3. Clear key will disable the drive.

ESC (escape) KEY:

1. Will back out of the sub programming menu without saving changes.

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• **PASS WORD**

The PASS WORD is used to lock the menus of the control. This option is used to prevent unauthorized access to variable data. When shipped from the factory, the pass word is to 7074 and NO MENUS are locked. The pass word can not be changed.

• **PRODUCT SENSOR**

This is an external device that when "activated" starts the application cycle.

PROGRAMMABLE BLOCKS:

Product Delay – delays the application of the label (xx.xxx) seconds after the sensor has been activated.
Sensor Trigger – designates whether the product sensor is activated at the leading or trailing edge of the product.
On Debounce – allows a small delay to be programmed in to prevent false triggering on the **leading** edge of the product.
Off Debounce - allows a small delay to be programmed in to prevent false triggering on the **trailing** edge of the product.
Multiple Feed – how many labels are applied to one product with one signal.
Interval Delay – amount of time in seconds between multiple fed labels Note: only active if quantity 2 or higher
DISTANCE USED WITH ENCODER ONLY OPTION
Dist 0 to 2 – used to set the position of the **first** label to be applied in "Multiple Feed" applications.
Dist 0 to 3 –used to set the position of the **second** label to be applied in "Multiple Feed" applications.
Dist 0 to 4 –used to set the position of the **third** label to be applied in "Multiple Feed" applications.
Dist 0 to 5 Dist 0 to 6 Dist 0 to 7 Dist 0 to 8 Dist 0 to 9
Dist 0 to 10 – used to set the position of the **tenth** label to be applied in "Multiple Feed" applications.

• **TAMP SET UP**

This is used to adjust the different variables related to the tamp cycle.

PROGRAMMABLE BLOCKS:

Tamp duration – used to adjust the time that the tamp cylinder valve is actuated. (0.000 to 9.999)
Flag duration – used to adjust the time the flag jaws are held open after label application. (00.00 to 99.99)
Head up limit switch – type: ***normally open-***standard, normally closed, none
Head up Dbounce – Debounce is used to allow time for the tamp cylinder to settle on return. (00.00 to 01.00)
Vacuum Release – Used to release label when tamping on light products.
Vacuum Delay On – Used to reduce label flutter when feeding large labels while tamping.
Tamp Sync Logic – Output on (normal) or Off (reverse) when tamp cylinder is up.

• **AUX TAMP SET UP (OPTIONAL)**

This is used to adjust the different variables related to the secondary tamp cycle.
Secondary tamp utilized on a two stage corner wrap.

PROGRAMMABLE BLOCKS:

Tamp duration – used to adjust the time that the secondary tamp cylinder valve is actuated. (0.000 to 9.999)
Product Delay – delays the activation of the secondary tamp (xx.xxx) seconds after the sensor has been activated.

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• TAKE UP

This is used to delay the start and stop of the take up motor.

PROGRAMMABLE BLOCKS:

On delay – delays (x) seconds after start print before starting take up motor.
Off delay – take up runs (x) seconds after end print signal is received from printer.
Jog take up – press the UP ARROW to start and the DOWN ARROW to stop the take up motor.

• COUNTER

Used to reset the internal counter of the control.

• PRINT TYPE

The print type command is used to activate the print repeat cycle in the supplied print engine. This feature will continue to print the **last label** in the buffer after the buffer count has expired.

PROGRAMMABLE BLOCKS:

Reprint – turns print option ON or OFF
Serial End – On or Off / sends a serial command out comm #1 serial port(ESC / D / CR) at the “End of Cycle”.

Char-1	ESC	27 decimal
Char-2	D	68 decimal
Char-3	CR	13 decimal

• ENCODER

Provides a more consistent way to apply labels to a product. With this option a distance from the trigger point can be set at which the label is to be applied. Note: optional encoder must be used with this feature.

PROGRAMMABLE BLOCKS:

Encoder - used to turn the encoder option on or off.
Enc Override – Allows fine-tuning of the ratio of applicator speed to conveyor speed.
Trigger Distance - used to apply the label a certain distance away from the trigger point.
Start Comp Dist – Start Compensation Distance used to compensate for variable speed applications.
Max Convyer IPM – Enter Maximum conveyor speed in inches per minute.
Enc lines/inch - tells how many pulses the encoder will count with 1 inch of travel. (25 to 500 counts per inch)

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• CYCLE TYPE

Cycle Type determines the application type and sequence in relation to the label feed.

PROGRAMMABLE BLOCKS:

No Tamp – not normally used
Tamp Before Feed – (standard) Tamps label first, prints label second
Tamp After Feed - Prints label first, tamps label second
Blow Before Feed – Blows on label first, prints label second
Blow After Feed - Prints label first, Blows on label second
PrePrint Tamp –
PrePrint Blow -

Variable data - The **PREPRINT CYCLES** allows an optional (PRE-PRINT) product trigger to print the label, the second (standard) trigger would activate the tamp cycle only. This is used primarily with variable data being gathered for example when the applicator is being interfaced with a scale.

• JOB STORAGE

Used to store frequently used settings pertaining to different labeling jobs.

PROGRAMMABLE BLOCKS:

SAVE JOB – stores settings for active job. (1 to 6 job positions)
RESTORE JOB – Restores saved job. (1 to 6 job positions)
Delete Job – Delete stored job

• DEFAULTS

This setting will return the controller to the default settings.

• I/O STATUS

Displays the status of the inputs and outputs.

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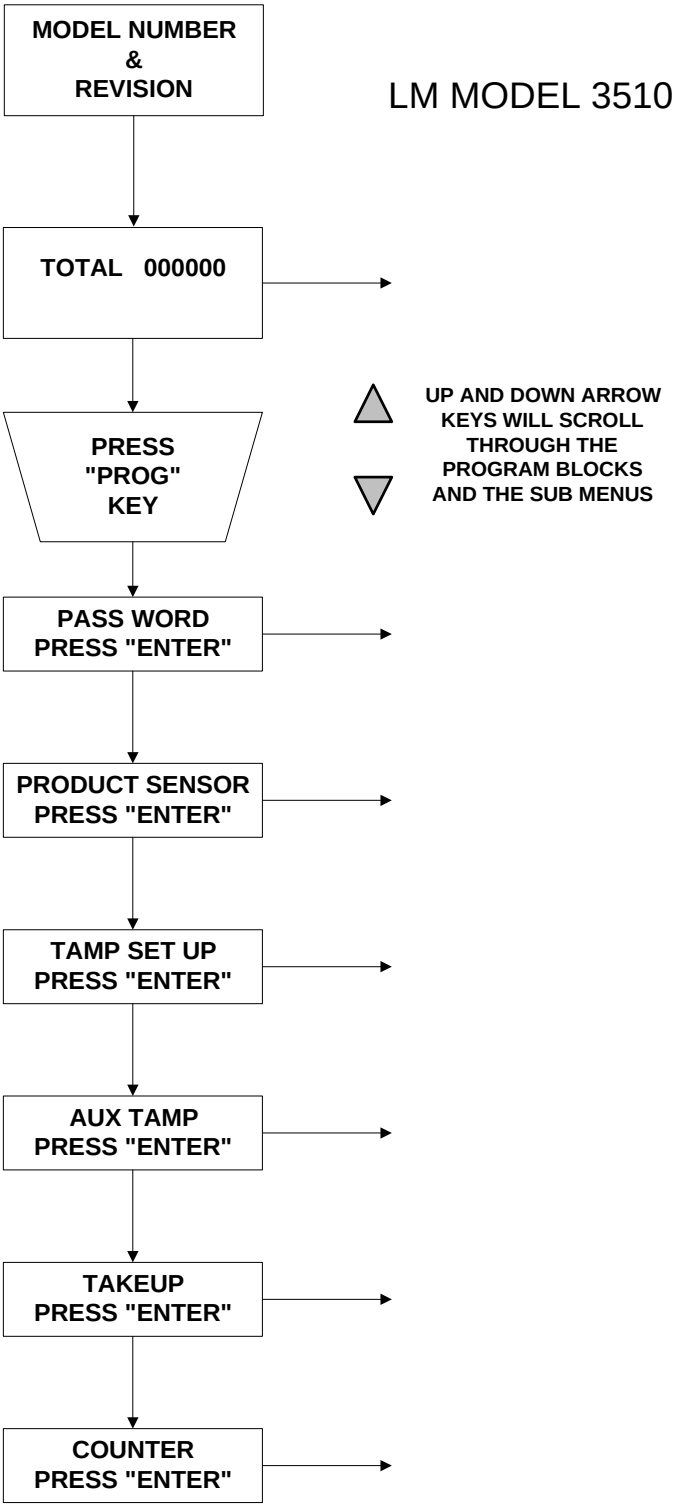
QUICK PROGRAMMING CHART


MODEL NUMBER & REVISION
LM MODEL 3510
TOTAL 000000
PRESS "PROG" KEY
UP AND DOWN ARROW KEYS WILL SCROLL THROUGH THE PROGRAM BLOCKS AND THE SUB MENUS
PASS WORD PRESS "ENTER"
PRODUCT SENSOR PRESS "ENTER"
TAMP SET UP PRESS "ENTER"
AUX TAMP PRESS "ENTER"
TAKEUP PRESS "ENTER"
COUNTER PRESS "ENTER"

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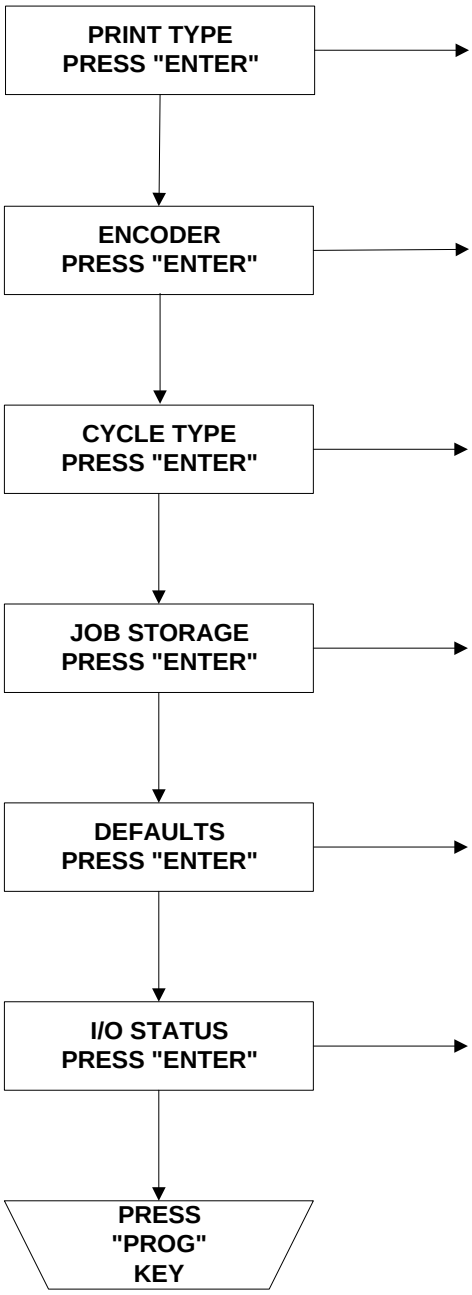

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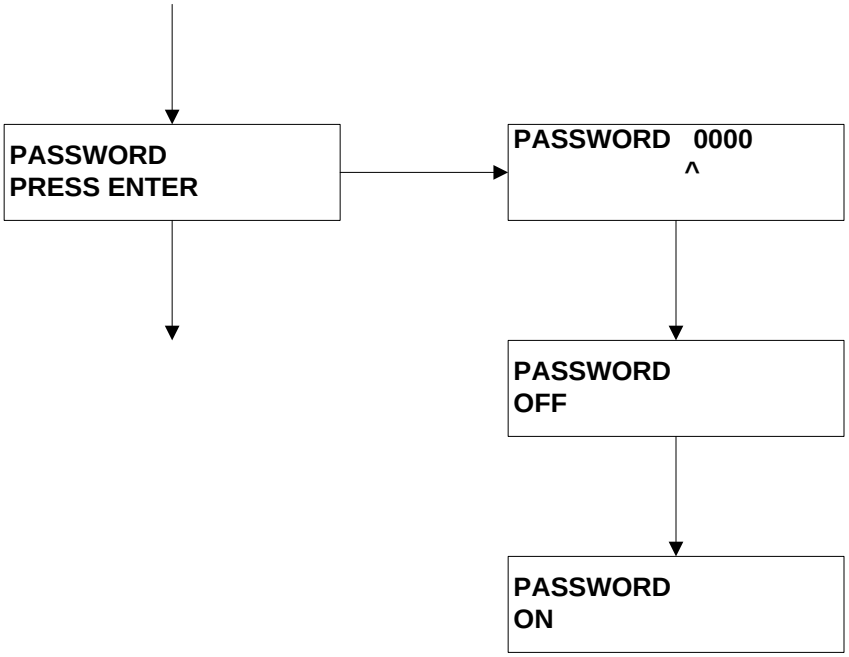
MAIN DISPLAYS



Note: use UP and DOWN arrows to toggle between "ON" and "OFF". The enter key will save selection.

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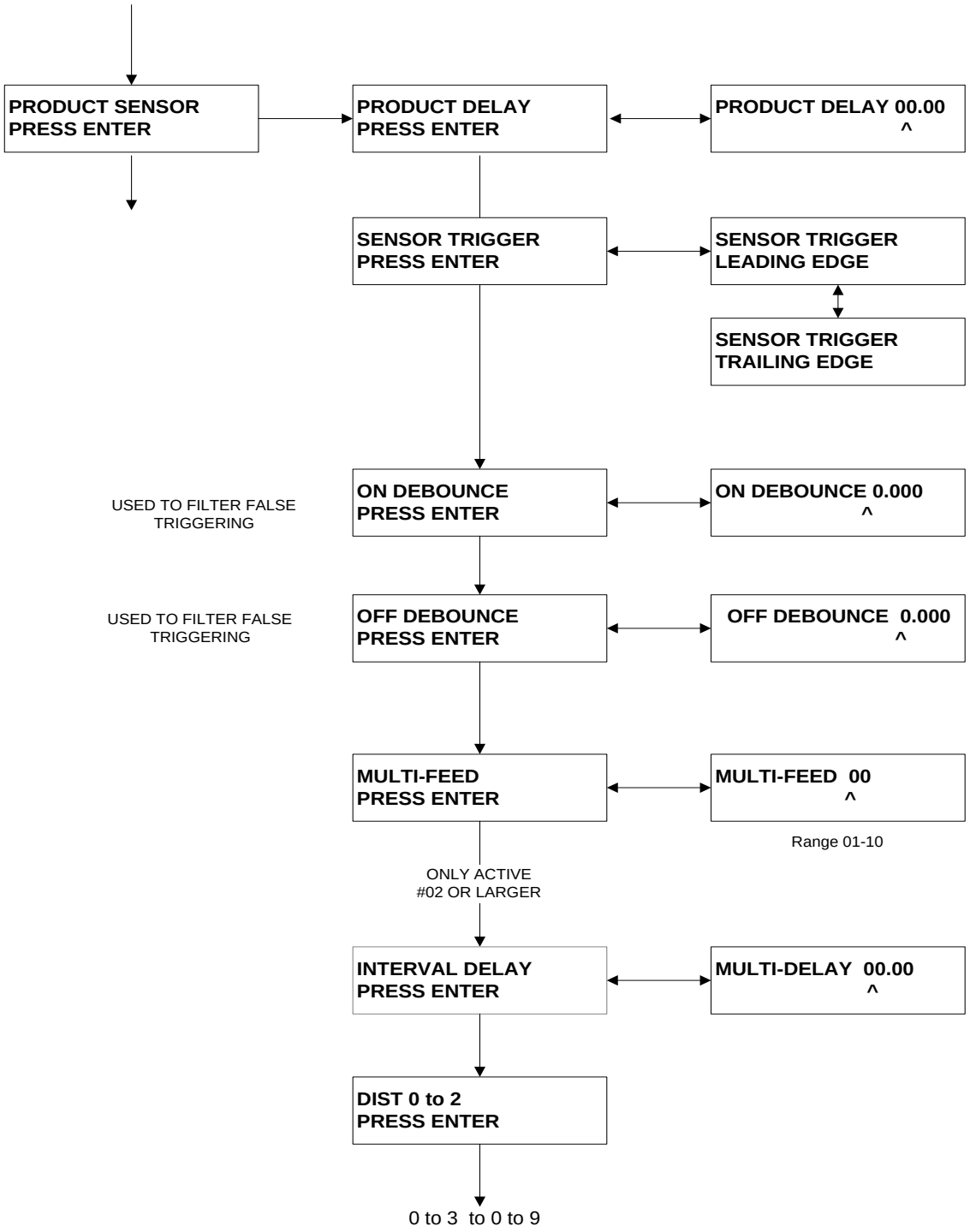

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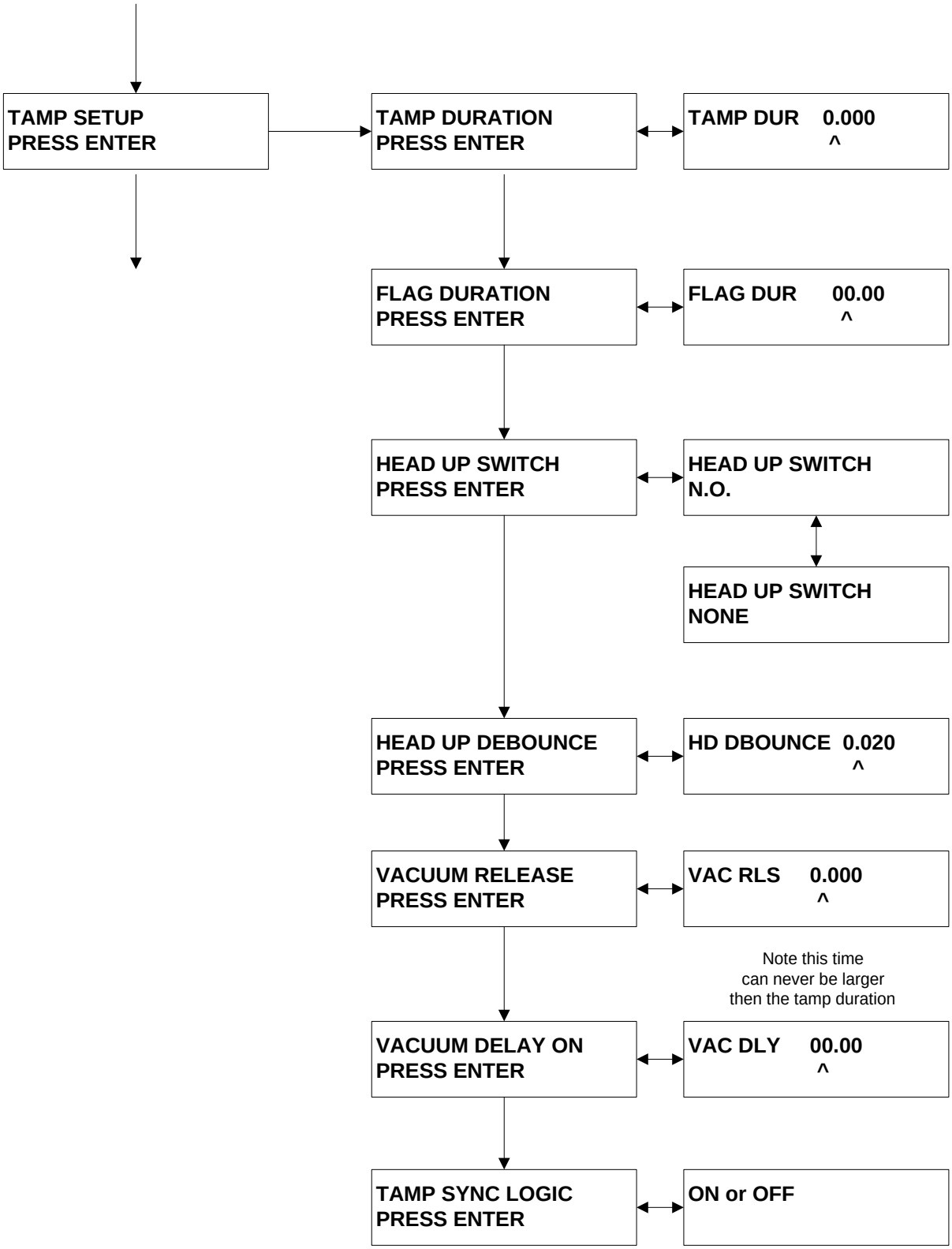

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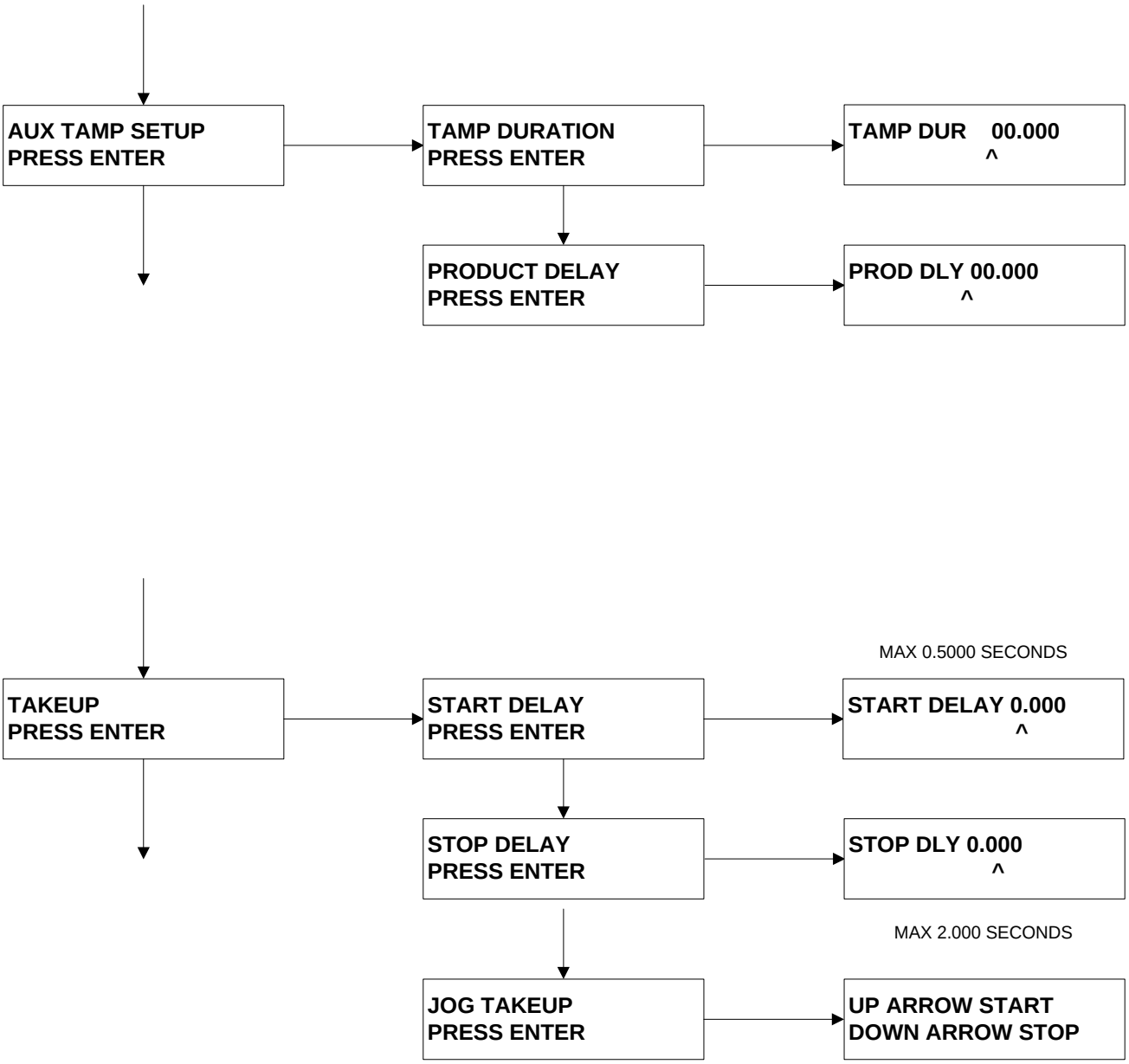

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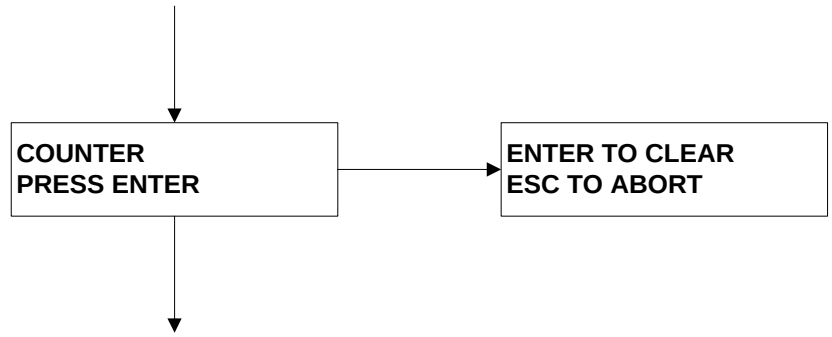

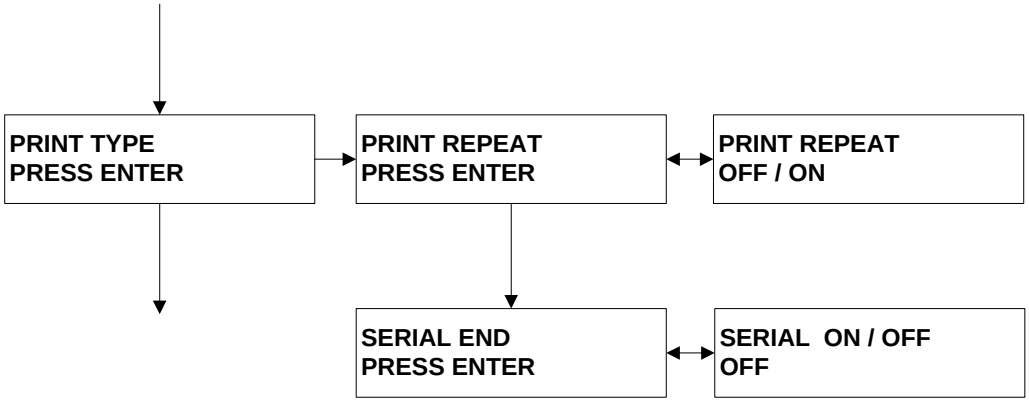

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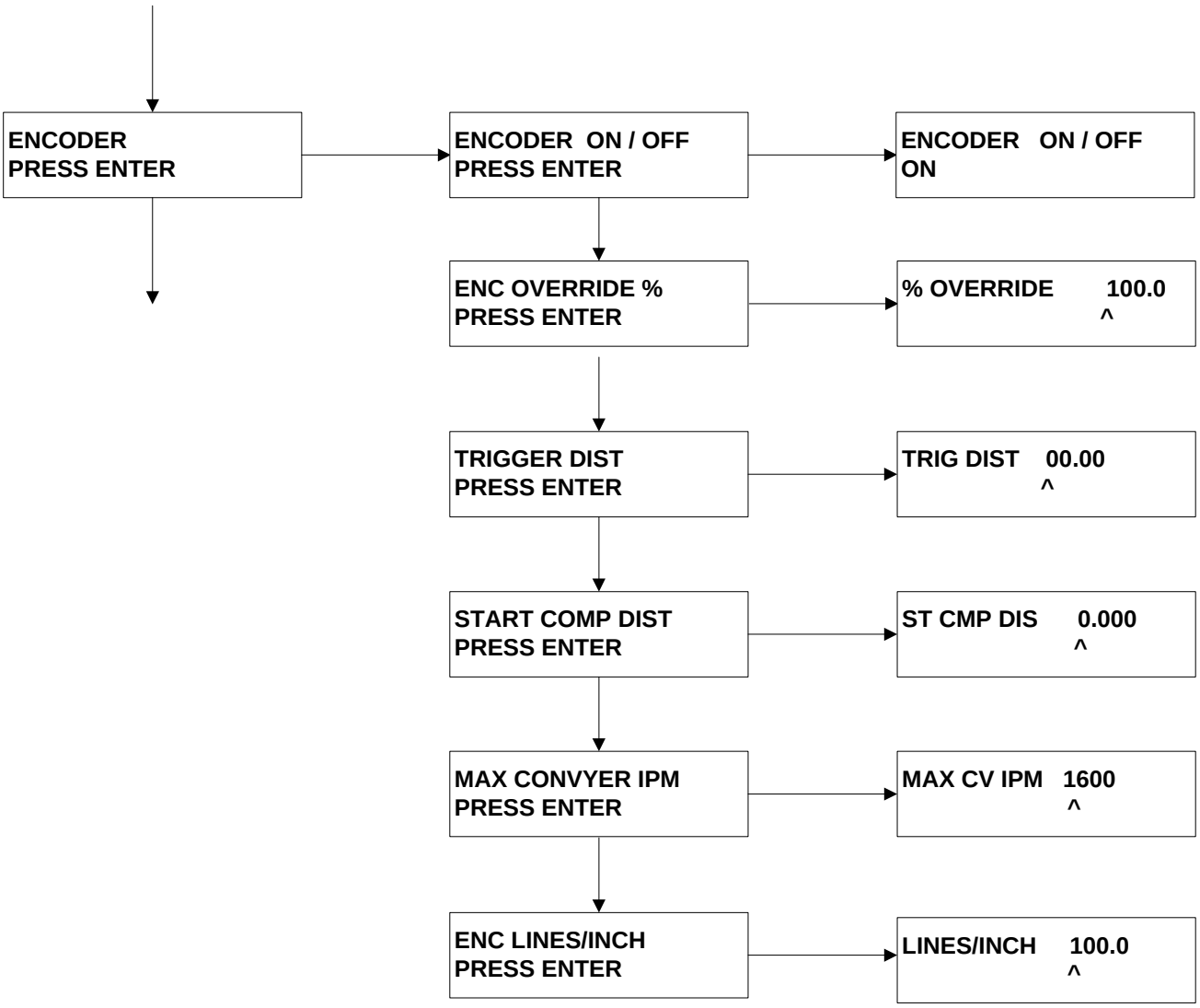

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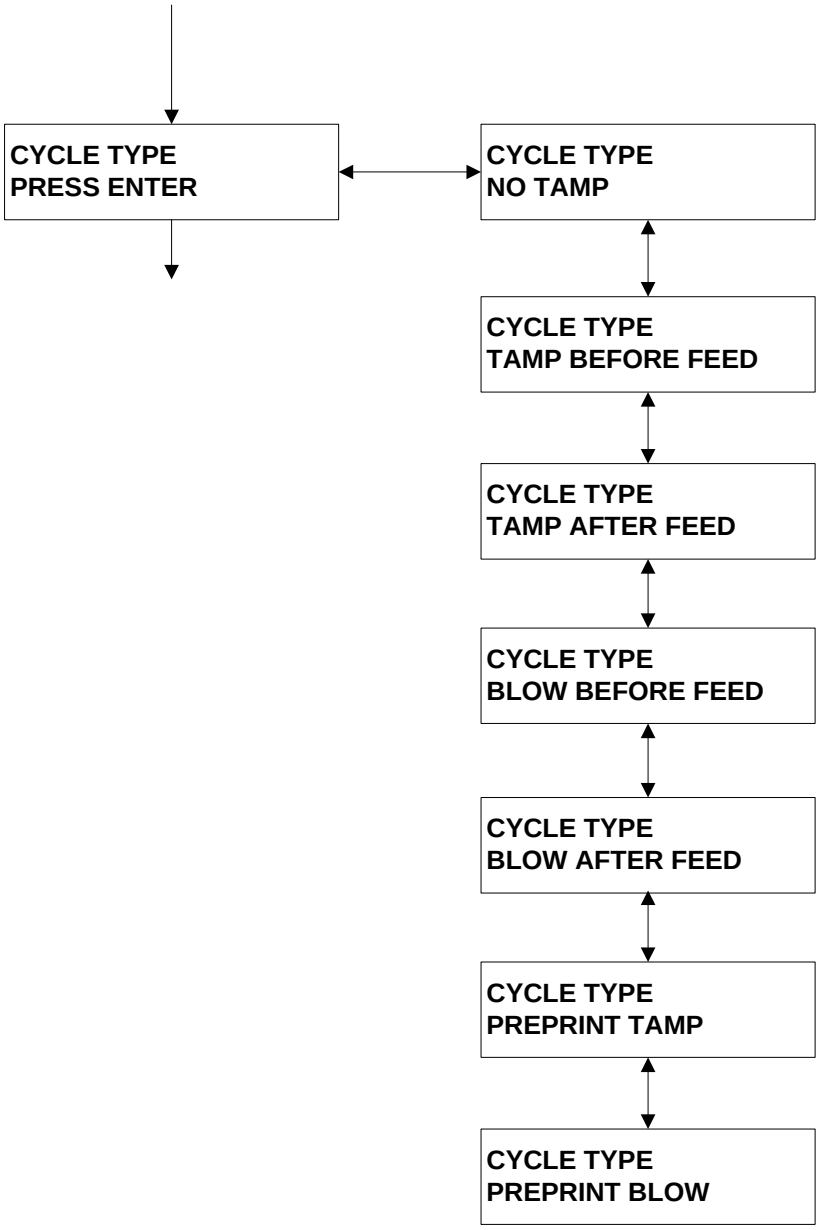

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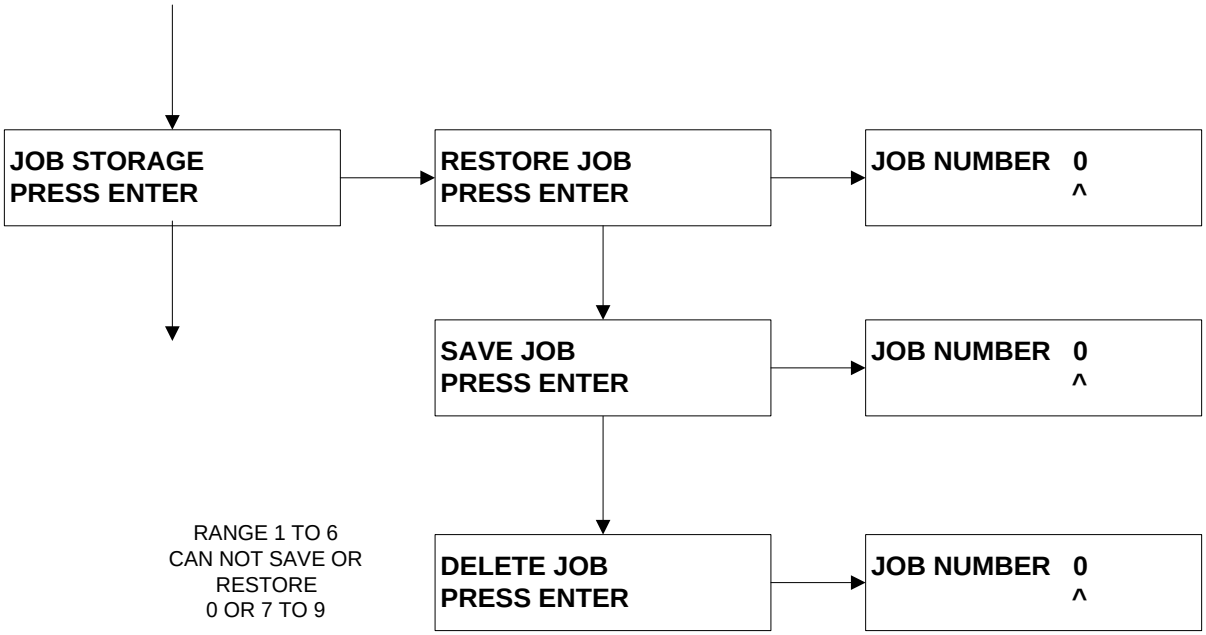

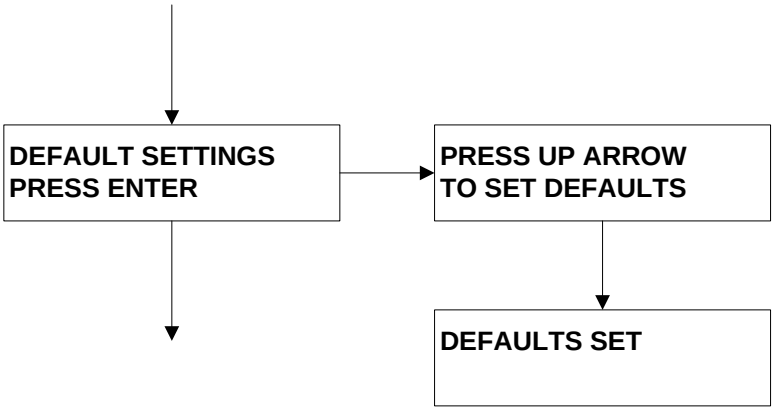

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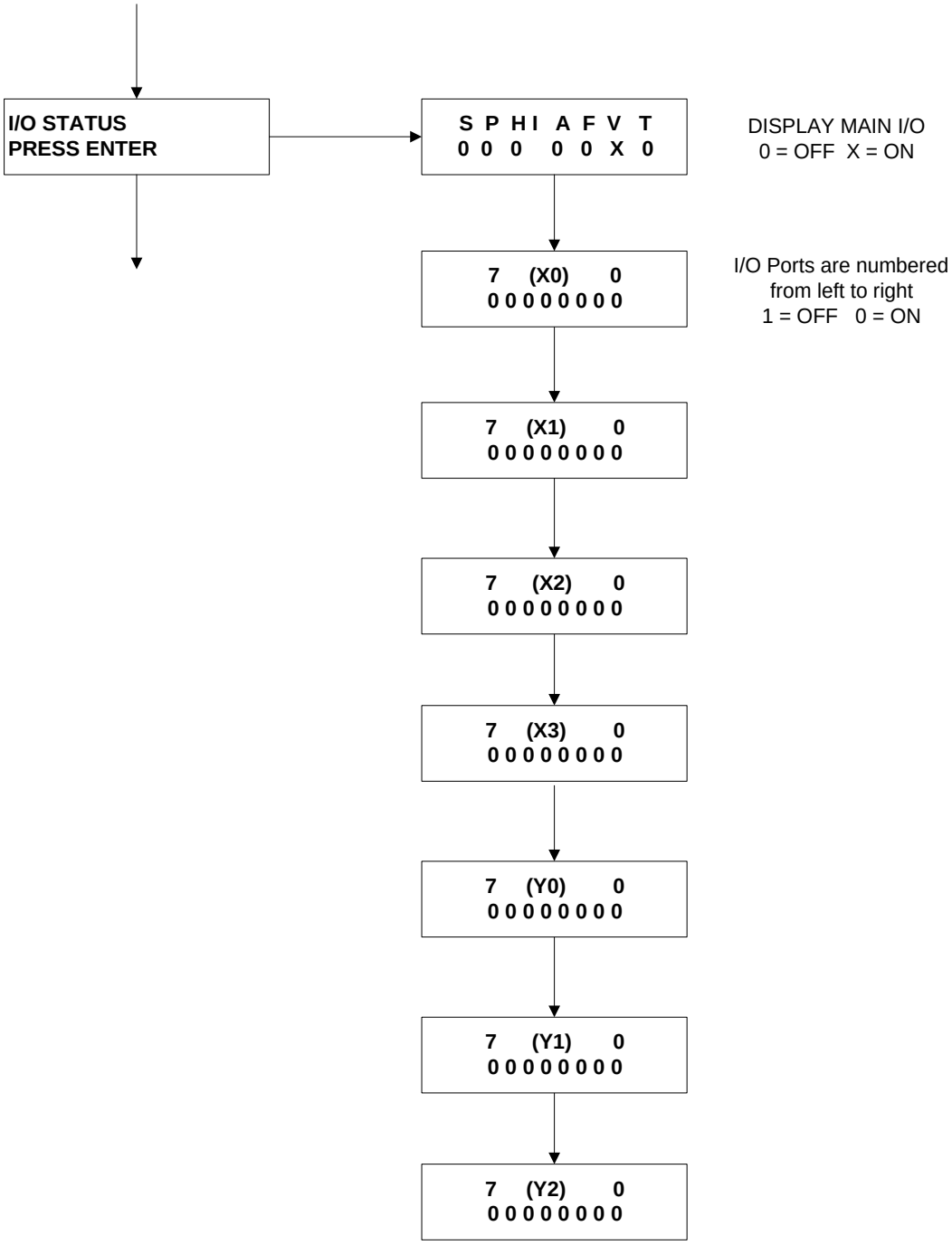
I/O STATUS
PRESS ENTER
S P HI A F V T
0 0 0 0 0 X 0
DISPLAY MAIN I/O
0 = OFF X = ON
7 (X0) 0
0 0 0 0 0 0 0 0
I/O Ports are numbered
from left to right
1 = OFF 0 = ON
7 (X1) 0
0 0 0 0 0 0 0 0
7 (X2) 0
0 0 0 0 0 0 0 0
7 (X3) 0
0 0 0 0 0 0 0 0
7 (Y0) 0
0 0 0 0 0 0 0 0
7 (Y1) 0
0 0 0 0 0 0 0 0
7 (Y2) 0
0 0 0 0 0 0 0 0

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KEY DEFINITIONS

- ASYNCHRONOUS OPERATION – The term "ASYNCHRONOUS OPERATION" is used because the speed of the printer applicator motor (label speed) does not necessarily match the speed of the product conveyor. In other words their speed is set independently of one another and has NO interrelation. The 3510 can only be configured in asynchronous operation.

- SYNCHRONOUS OPERATION - The term "SYNCHRONOUS OPERATION" is used because the speed of the applicator motor (label speed) is matched to the speed of the product conveyor. In order to accomplish this, an encoder is used to monitor the speed and distance the product conveyor travels. In order for this feature to function the "CONVEYOR LOCK" mode must be turned on. In synchronous operation, the applicator motor is ELECTRONICALLY GEARED to the product conveyor. **The 3510 can NOT be configured in synchronous operation.**

- START COMPENSATION – Start compensation compensates for the reaction time of the Label Mill control and start signal from the product switch. The purpose of start compensation is to maintain label placement on a product that is traveling at different speeds. An example of this is a conveyor that accelerates on start up and decelerates to a stop. At high speeds an uncompensated system would apply a label too late and the label would be placed too far back on the product. Linear interpolation is used to correct this problem. The start compensation corrects this error by adding an offset distance at LOW speeds, since it is not possible to apply any correction at high speed. **Note: Start compensation ONLY effects label placement on product.**

- ELECTRONIC GEARING – Electronic gearing is a function of the product encoder and the Label Mill control. This is used to match the speed of the applicator to the product conveyor. Electronic gearing is similar to mechanical gearing in that there is a gear ratio and the change of speed of one affects the speed of the other. This feature is part of the Synchronous feed mode. In order for this to operate properly, the correct number of lines per inch of product travel must be entered into the ENC LINES/INCH in menu #6.

- ENCODER – AN ENCODER is a device that is used to monitor the speed of an external device like a product conveyor. The reason this speed is monitored is to match the speed of the label applicator to the product speed. An encoder uses "LINES or COUNTS" per revolution in order to track speed and distance. Note that lines per revolution are also referred to as counts per revolution. These counts are feed into the LABEL MILL control to be processed for the different features that require this feed back.

- ENCODER OVERRIDE – This feature is used in conjunction with ELECTRONIC GEARING. This feature is used to fine-tune the ratio of the applicator to the product conveyor.

- TRIGGER DIST – TRIGGER DISTANCE is used in conjunction with the encoder feature. Trigger distance is similar to product delay in that it is used to electronically move the placement of the label on the product. When the encoder feature is used, the product delay feature is rendered inactive. Trigger distance will move the label placement in inches (00.00).

- PRODUCT DELAY is NOT used in conjunction with the encoder feature. Product delay is similar to trigger distance in that it is used to electronically move the placement of the label on the product. Product delay will move the label placement in time (00.000) seconds. Because the product delay feature utilizes time, the speed of the product MUST remain constant. A product traveling at a higher velocity will travel further in a given time, thus effecting the placement of the label.

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QUICK START

1. Inspect applicator system and verify all cables are installed properly.
2. Web system with labels.
3. Turn power switch on.
4. Press “PROG”
5. Press down arrow
6. Enter Defaults
7. Press Up Arrow
8. Defaults are now set
9. Down arrow to Tamp Setup
10. Set tamp duration to .500 and set Head up switch to “N.O.”
11. Arrow down to Cycle Type
12. Set cycle type to “Tamp before feed”
13. System is now ready for set up of advanced features and options.

SETUP OF KEY FEATURES

HOW TO SET UP AN ASYNCHRONOUS APPLICATION

- **“TAMP” WITHOUT A ENCODER**

Determine the following and select it in the software

1. Type of application mode.
2. Tamp before or after feed (before feed is standard)
3. Enter a value in the tamp duration (start with 00.200)
4. Set head up limit switch, normally open is standard
5. Use the product delay to “MOVE” the label on the product

The asynchronous application mode is used to apply labels to products that are either stationary or moving at a constant speed when the label application is to take place.

- **“BLOW” WITHOUT AN ENCODER**

Determine the following and select it in the software

1. Type of application mode.
2. Blow before or after feed (before feed is standard)
3. Enter a value in the tamp duration (start with 00.10)
4. Set head up limit switch to NO TAMP SWITCH
5. Use the product delay to “MOVE” the label on the product

The asynchronous application mode is used to apply labels to products that are either stationary or moving at a constant speed when the label application is to take place.

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- **TAMP OR BLOW WITH A ENCODER**

Determine the following and select it in the software

1. Type of application mode. (Tamp, or Blow) (refer to above)
2. Tamp or blow before or after feed (before feed is standard)
3. Enter a value in the tamp duration (start with 00.200)
4. Turn encoder ON
5. Encoder OVERRIDE is used to fine tune the GEARING RATIO between applicator and conveyor
6. Trigger distance is used to "MOVE" label on product (product delay is disabled)
7. Enter a Start Comp value. START Comp is used to compensate for label drift when speed of conveyor changes. To calculate this refer to the section on "Start Compensation"
8. ENC LINES/INCH enter the proper "lines per inch" to match encoder output to conveyor speed. To calculate "lines per inch", refer to the section on Gearing.

HOW TO SET UP FEATURES UTILIZING AN ENCODER

- START COMP DIST – START COMPENSATION DISTANCE

1. Set basic applicator up first, refer to quick setup
2. Set ENCODER to "ON".
3. Set TRIGGER DIST to 00.00
4. Set ENCODER LINES PER INCH (refer to ENC LINES set up)
5. Start system and apply label at the fastest desired speed. (system should not exceed maximum rate of applicator)
6. Move product switch or use TRIGGER DIST to register label to desired position. Keep trigger distance to a minimum for best results.
7. Change speed of system and operate it at the lowest speed desired.
8. Measure the offset in label placement.
9. Enter the measured offset into the START COMP DIST.
10. Operate system at the same low speed again and check label offset.
11. Make the necessary adjustments to the START COMP DIST.
12. Test again, repeat if necessary until label is in proper registration.
13. System should now hold registration throughout speed range.
14. Turn back on any options that may have been disabled for setup of this particular feature.

Note there will be some label drift if speed range is too great or top speed is out of range of applicator. There is also the normal placement tolerance that will affect the accuracy of the system.

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- **CALCULATING ENCODER LINES PER INCH (gearing)**

There are two basic concepts utilized to interface the product ENCODER to the Label Mill control. One method utilizes a wheel mounted directly to an encoder. This wheel rests on the belt surface and rotates when the belt moves. The second method is to mechanically slave the encoder to the conveyor utilizing belts or a chain etc. Note: Lines per revolution are also referred to as counts per revolution. The following is only a sample of the many ways there is to couple an encoder to a product conveyor.

WHEEL - MOUNTED

1. Check encoder to determine the number of lines per revolution.
2. Measure diameter of contact wheel.
3. Multiply diameter of wheel by Pi, this will give circumference.
4. Divide encoder lines per revolution by circumference, this will net lines per inch.
5. Enter this number into menu #6 “ENC LINES/INCH”, note that this number needs to be between 25 & 500.

EXAMPLE

1. Encoder lines per revolution “1000”.
2. Contact wheel diameter “6.00”.
3. 6.00 x 3.14 = 18.84”
4. 1000 / 18.84 = 53.1 (rounding number to the 10$^{th)}$
5. Enter 53.1 into “ENC LINES/INCH”

DIRECT DRIVE

1. Check encoder to determine the number of lines per revolution.
2. Determine the gear ratio of the encoder to the conveyor
3. Measure diameter of conveyor drive wheel.
4. Multiply diameter of wheel by Pi, this will give circumference.
5. Divide encoder lines per revolution by circumference, this will net lines per inch of wheel.
6. Multiply this number by the gear ratio, this will net lines per inch
7. Enter this number into menu #6 “ENC LINES/INCH”, note that this number needs to be between 25 & 500.

EXAMPLE

1. Encoder lines per revolution “1000”.
2. Gear ratio is 2 to 1.
3. Conveyor drive wheel diameter “6.00”.
4. 6.00 x 3.14 = 18.84”
5. 1000 / 18.84 = 53.079
6. 53.079 x 2 = 106.2 (rounding number to the 10$^{th)}$
7. Enter 106.2 into “ENC LINES/INCH”

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- **TRIGGER DIST – TRIGGER DISTANCE**

TRIGGER DISTANCE is used in conjunction with the encoder feature ONLY. Trigger distance is similar to product delay in that it is used to electronically move the placement of the label on the product. When the encoder feature is used, the product delay feature is rendered inactive. Trigger distance will move the label placement in inches (00.00).

1. Set basic applicator up first, refer to quick setup
2. Ensure that the applicator is operating properly before starting this procedure.
3. This feature requires the use of an encoder. The appropriate encoder features should be setup prior to this feature.
4. Set ENCODER to "ON".
5. Set ENODER LINES "XXXX.X" Refer to CALCULATING ENCODER LINES PER INCH section.
6. Set TRIGGER DIST to 00.00
7. Start system and apply label at the desired speed.
8. Check the placement of the label on the product.
9. Measure the OFFSET of the label placement. Note: A label CAN NOT be advanced on the product ONLY moved "back" since the applicator can only delay the product signal.
10. Apply the measured offset to the TRIGGER DISTANCE or if too great it may be necessary to physically move the product switch. Keep trigger distances to a minimum for best results.
11. Operate system again and measure offset.
12. Enter the measured offset, IF ANY, into the TRIGGER DISTANCE.
13. Test again, repeat if necessary until label is in proper registration.
14. Turn back on any options that may have been disabled for setup of this particular feature.

- **PRODUCT DELAY**

PRODUCT DELAY is NOT used in conjunction with the encoder feature. Product delay is similar to trigger distance in that it is used to electronically move the placement of the label on the product. Product delay will move the label placement in time (00.000). Because the product delay feature utilizes time, the speed of the product MUST be constant and consistent.

1. Set basic applicator up first, refer to quick setup
2. Ensure that applicator is operating properly before starting this procedure.
3. This feature requires the use of an encoder. The appropriate encoder features should be setup prior to this feature.
4. Set ENCODER to "OFF".
5. Set CONVEYOR LOCK to "OFF" if in ASYNCHRONOUS operation.
6. If in SYNCHRONOUS operation PRODUCT DELAY WILL NOT WORK
7. Set Product delay to 00.000
8. Start system and apply label at the desired speed.
9. Check the placement of the label on the product.
10. Measure the OFFSET of the label placement. Note: A label CAN NOT be advanced on the product ONLY moved "back" since the applicator can only delay the product signal.
11. Apply a small delay to the product delay or if too great, it may be necessary to physically move the product switch. Keep product delays to a minimum for best results.
12. Operate system again and measure offset.
13. Apply a small delay to the product delay or reduce if too much.
14. Test again, repeat if necessary until label is in proper registration.
15. Turn back on any options that may have been disabled for setup of this particular feature

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HOW TO SET UP AN VARIABLE DATA APPLICATION

- **TAMP / BLOW WITHOUT AN ENCODER WITH TWO TRIGGER PHOTO EYES**

Variable data application is utilized when the LM3510 is interfaced with a scale or other equipment that will be transmitting a DIFFERENT label format to the applicator for every label that is applied. When this option is activated, the use of the **pre-print photo eye (option) is required**. The pre-print photo eye will trigger the printing of the label. The product photo eye (switch) will trigger the application (tamp) of the label. The reason for two triggers is to improve the accuracy of the label placement when **printing before applying**.

General set up

1. The PRE-PRINT photo eye connects to the remote trigger connector pre-print product switch P1-A.
2. The PRE-PRINT photo eye should be set to trigger on the leading edge of the product.
3. The PRE-PRINT photo eye should be set to trigger BEFORE the product switch.
4. The PRE-PRINT photo eye should be set to allow the printer enough time to print the format before the product switch is activated.
5. The PRODUCT DELAY should be kept to a minimum.

Determine the following and select it in the software

- **PREPRINT TAMP WITHOUT AN ENCODER**

1. Type of application mode. Select PREPRINT TAMP
2. Enter a value in the tamp duration (start with 00.20)
3. Set head up limit switch, normally open is standard
4. Use the product delay to “MOVE” the label on the product

The asynchronous application mode is used to apply labels to products that are either stationary or moving at a constant speed when the label application is to take place.

- **PREPRINT BLOW WITHOUT AN ENCODER**

Determine the following and select it in the software

1. Type of application mode. Select PREPRINT BLOW
2. Enter a value in the tamp duration (start with 00.20)
3. Set head up limit switch, “NO TAMP SWITCH”
4. Use the product delay to “MOVE” the label on the product

The asynchronous application mode is used to apply labels to products that are either stationary or moving at a constant speed when the label application is to take place.

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HOW TO SET UP AN VARIABLE DATA APPLICATION

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General set up

1. The PRE-PRINT photo eye connects to the remote trigger connector pre-print product switch P1-A.
2. The PRE-PRINT photo eye should be set to trigger on the leading edge of the product.
3. The PRE-PRINT photo eye should be set to trigger BEFORE the product switch.
4. The PRE-PRINT photo eye should be set to allow the printer enough time to print the format before the product switch is activated.
5. Turn encoder ON

Determine the following and select it in the software

- **PREPRINT TAMP WITH AN ENCODER**

1. Type of application mode. Select PREPRINT TAMP
2. Enter a value in the tamp duration (start with 00.20)
3. Set head up limit switch, normally open is standard
4. Turn encoder ON
5. Encoder OVERRIDE is used to fine tune the GEARING RATIO between applicator and conveyor
6. Trigger distance is used to "MOVE" label on product (product delay is disabled)
7. Enter a Start Comp value. START Comp is used to compensate for label drift when speed of conveyor changes. To calculate this refer to the section on "Start Compensation"
8. ENC LINES/INCH enter the proper "lines per inch" to match encoder output to conveyor speed. To calculate "lines per inch", refer to the section on Gearing.

- **PREPRINT BLOW WITH AN ENCODER**

Determine the following and select it in the software

1. Type of application mode. Select PREPRINT BLOW
2. Enter a value in the tamp duration (start with 00.20)
3. Set head up limit switch, "NO TAMP SWITCH"
4. Turn encoder ON
5. Encoder OVERRIDE is used to fine tune the GEARING RATIO between applicator and conveyor
6. Trigger distance is used to "MOVE" label on product (product delay is disabled)
7. Enter a Start Comp value. START Comp is used to compensate for label drift when speed of conveyor changes. To calculate this refer to the section on "Start Compensation"
8. ENC LINES/INCH enter the proper "lines per inch" to match encoder output to conveyor speed. To calculate "lines per inch", refer to the section on Gearing.

The asynchronous application mode is used to apply labels to products that are either stationary or moving at a constant speed when the label application is to take place.

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HOW TO APPLY MULTIPLE LABELS TO A SINGLE PRODUCT

Product delay is used to electronically move the placement of the **FIRST** label on the product. Product delay will move the label placement in time (00.000). Because the product delay feature utilizes time, the speed of the product MUST be constant and consistent. This section will explain how to apply more than one label to a single product with a single start signal. MULTIPLE FEED will allow you to select how many labels to be applied.

- **WHEN NOT UTILIZING A ENCODER**

1. Set basic applicator up first, refer to quick setup
2. Ensure that applicator is operating properly before starting this procedure.
3. Set Product delay to 00.000
4. Start system and apply label at the desired speed.
5. Check the placement of the label on the product.
6. Measure the OFFSET of the label placement. Note: A label CAN NOT be advanced on the product ONLY moved “back” since the applicator can only delay the product signal.
7. Apply a small delay to the product delay or if too great, it may be necessary to physically move the product switch. Keep product delays to a minimum for best results.
8. Operate system again and measure offset.
9. Apply a small delay to the product delay or reduce if too much.
10. Test again; repeat if necessary until label is in proper registration.
11. Go to **MULTIPLE FEED** in PRODUCT SENSOR menu and set the number of labels to be applied to the product.
12. Set the Distance between each label entering a time (0.000) into **“INTERVAL DELAY”**
13. Test the placement of the labels and adjust as necessary. Note: The spacing between each label will be equal. With this feature the space between labels **can not** be set individually.
14. Note: **TRAILING EDGE TRIGGER** will NOT work with this feature!
15. Note: Product speed fluctuations can effect label placement.
16. Turn back on any options that may have been disabled for setup of this particular feature.

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HOW TO APPLY MULTIPLE LABELS TO A SINGLE PRODUCT

- **WHEN UTILIZING A ENCODER**

This section will explain how to apply more than one label to a single product with a single start signal. TRIGGER DISTANCE will move the label placement in inches (00.00) for the **FIRST LABEL**. MULTIPLE FEED will allow you to select how many labels to be applied. Note that when the start signal "goes false" this feature is reset. When the encoder feature is used, the product delay feature is rendered inactive.

1. Set basic applicator up first, refer to quick setup
2. Ensure that the applicator is operating properly before starting this procedure.
3. This feature requires the use of an encoder. The appropriate encoder features should be setup prior to this feature.
4. Set ENCODER to "ON".
5. Set CONVEYOR LOCK to "ON" if in SYNCHRONOUS operation and "OFF" if in ASYNCHRONOUS operation.

6. Set TRIGGER DIST to 00.00 (refer to TRIGGER DISTANCE setup)
7. Start system and apply label at the desired speed.
8. Check the placement of the label on the product.
9. Measure the OFFSET of the label placement. Note: A label CAN NOT be advanced on the product ONLY moved "back" since the applicator can only delay the product signal.
10. Apply the measured offset to the TRIGGER DISTANCE or if too great it may be necessary to physically move the product switch. Keep trigger distances to a minimum for best results.
11. Operate system again and measure offset.
12. Enter the measured offset, IF ANY, into the TRIGGER DISTANCE.
13. Test again, repeat if necessary until label is in proper registration.
14. Go to MULTIPLE FEED in menu #1 and set the number of labels to be applied to the product.
15. Set the Distance between each label by measuring from the front of the product to where you would like the label to be applied.
16. Set this distance in the 0 to 2 and repeat this for each label to be applied. 0 to 3, 0 to 4, etc.
17. Test the placement of the label and adjust as necessary. Note: The measurements entered are reference only and may not correspond exactly to the actual label offset measurements.
18. Note: TRAILING EDGE TRIGGER will NOT work with this feature!
19. Note: Product speed fluctuations can effect label placement.
20. Turn back on any options that may have been disabled for setup of this particular feature.

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DESCRIPTION OF I/O

LEGEND

24V OPT: 24V OPTO INPUT WITH INTERNAL 24V COMMON
OH: HIGH CURRENT OUTPUT Rated @ 500ma

All user inputs and outputs are **"SINKING"** type. Example in order for a status light to illuminate for "Run Status Ok" the light should be wired between pins #1 & #8 on the **"DB-15 Light Bar/Aux."** Connector.

Status display legend.

INPUTS				OUTPUTS			
S	P	H		A	F	V	T
SMART TAMP	PRODUCT SENSOR	HEAD UP TAMP SENSOR		AIR ASSIST SOL	FLAG SOL	VACUUM SOL	TAMP SOL

0 = OFF X = ON

REMOTE TRIGGER CONNECTOR (PRODUCT SWITCH) 4 pin Amp	P1 PIN #	ADDRESS
+24 VDC	1	
TRIGGER INPUT	2	X0,0
24 COM	3	
	4	

REMOTE TRIGGER CONNECTOR (PRE-PRINT PRODUCT SWITCH) 4 pin Amp	P1-A PIN #	ADDRESS
+24 VDC	1	
TRIGGER INPUT	2	X0,1
24 COM	3	
	4	

TAMP SOLENOIDS CONNECTOR 9 pin Amp	P2 PIN #	INPUT/ OUTPUT	ADDRESS
TAMP SOL	1	O	Y0,3
VACUUM SOL	2	O	Y0,2
TAMP HEAD UP SW IN	3	I	X0,2
24 COM	4		
+24 VDC	5		
FLAG SOL	6	O	Y0,1
AIR ASSIST SOL	7	O	Y0,0
SMART TAMP IN	8	I	X0,3
AUX OUT 7	9	O	Y0,4

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PRINT AND APPLY INTERFACE	P4 PIN #	I/O	ADDRESS
PAPER END	1	INPUT	X0,5
PRINTER GROUND	2		
RIBBON END	3	INPUT	X0,6
PRINTER ERROR	4	INPUT	X0,7
PRINT START	5	OUTPUT	Y0,5
PRINT END	6	INPUT	X1,0
REPRINT	7	OUTPUT	Y0,6
BUFFER READY (Zebra only)	8	INPUT	X1,7
ONLINE (Sato only)	9	INPUT	X1,1
RIBBON NEAR END	10	INPUT	X1,2
	11		
	12		
+5vdc from printer	13		
	14		
SHIELD			

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LIGHT BAR/AUXILIARY CONNECTOR DB-15 MALE	P5 PIN #	INPUT/ OUTPUT	ADDRESS	
+24VDC	1			
+24VDC	2			
24 COM	3			
24 COM	4			
LOW LABEL IN	5	I	X1,3	
ERROR LITE (Red light)	6	O	Y0,7	
LOW LABEL (Yellow light)	7	O	Y1,0	
RUN STATUS OK (Green Light)	8	O	Y1,1	
TAMP SYNC OUT	9	O	Y1,2	
INHIBIT IN	10	I	X1,4	
LABEL FEED ERROR IN	11	I	X1,5	
Repeat Last label In	12	I	X1,6	
AUX IN 9	13	I	X3,4	
AUX OUT 5	14	O	Y1,3	
AUX OUT 6	15	O	Y1,4	

LIGHT BAR/AUXILIARY CONNECTOR DB-15 MALE	P5-A PIN #	INPUT/ OUTPUT	ADDRESS	
+24VDC	1			
+24VDC	2			
24 COM	3			
24 COM	4			
LOW LABEL IN	5	I	X1,3	
ERROR LITE (Red light)	6	O	Y0,7	
LOW LABEL (Yellow light)	7	O	Y1,0	
RUN STATUS OK (Green Light)	8	O	Y1,1	
TAMP SYNC OUT	9	O	Y1,2	
INHIBIT IN	10	I	X1,4	
LABEL FEED ERROR IN	11	I	X1,5	
Repeat Last label In	12	I	X1,6	
AUX IN 9	13	I	X3,4	
AUX OUT 5	14	O	Y1,3	
AUX OUT 6	15	O	Y1,4	

LIGHT BAR/AUXILIARY CONNECTOR DB-15 MALE	P5-B PIN #	INPUT/ OUTPUT	ADDRESS	
+24VDC	1			
+24VDC	2			
24 COM	3			
24 COM	4			
LOW LABEL IN	5	I	X1,3	
ERROR LITE (Red light)	6	O	Y0,7	
LOW LABEL (Yellow light)	7	O	Y1,0	
RUN STATUS OK (Green Light)	8	O	Y1,1	
TAMP SYNC OUT	9	O	Y1,2	
INHIBIT IN	10	I	X1,4	
LABEL FEED ERROR IN	11	I	X1,5	
Repeat Last label In	12	I	X1,6	
AUX IN 9	13	I	X3,4	
AUX OUT 5	14	O	Y1,3	
AUX OUT 6	15	O	Y1,4	

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AUX I/O **DB25 Female CONNECTOR #J1**	P6 PIN #	INPUT/ OUTPUT	ADDRESS	
+24VDC	1			
+24VDC	2			
24V COM	3			
24V COM	4			
Input Common	5			Pin 5 and 1 tied for sinking inputs, pin 5 to pin 3 for sourcing
2nd Tamp Output (Stand alone CW module)	6	O	Y1,7	
2nd Tamp Head Up Switch (CW module)	7	I	X2,2	
2nd Tamp Trigger in (photo eye) (CW module)	8	I	X2,3	
E-Stop PB Input	9			pin 9 and 10 tied for E-stop
E-Stop Reset PB input	10			
E-Stop PB's Common	11			
1520 TAKE-UP MOTOR	12	O	Y2,0	
AUX IN 10	13	I	X2,4	
AUX IN 8	14	I	X3,6	
AUX IN 1	15	I	X2,6	
AUX IN 2	16	I	X2,7	
AUX IN 3	17	I	X3,0	
AUX IN 4	18	I	X3,1	
AUX IN 5	19	I	X3,2	
AUX IN 6	20	I	X3,3	
AUX OUT 1	21	O	Y2,1	
AUX OUT 2	22	O	Y2,2	
AUX OUT 3	23	O	Y2,3	
AUX OUT 4	24	O	Y2,4	
Batch Done	25	O	Y1,6	

AUX I/O **DB25 Male CONNECTOR #J2**	P6-A PIN #	INPUT/ OUTPUT	ADDRESS	
AUX IN 10	1	I	X2,4	
1520 TAKE-UP MOTOR	2	O	Y2,0	
E-Stop PB's Common	3			24V RELAY CIRCUIT
E-Stop Reset PB input	4			24V RELAY CIRCUIT
E-Stop PB Input	5			24V RELAY CIRCUIT
2nd Tamp Trigger in (photo eye) (CW module)	6	I	X2,3	
2nd Tamp Head Up Switch (CW module)	7	I	X2,2	
2nd Tamp Output (Stand alone CW module)	8	O	Y1,7	
AUX OUT 5	9	O	Y2,5	
24V COM	10			
24V COM	11			
+24VDC	12			
+24VDC	13			
Batch Done	14	O	Y1,6	
AUX OUT 4	15	O	Y2,4	
AUX OUT 3	16	O	Y2,3	
AUX OUT 2	17	O	Y2,2	
AUX OUT 1	18	O	Y2,1	
AUX IN 7	19	I	X3,5	
AUX IN 5	20	I	X3,2	
AUX IN 4	21	I	X3,1	
AUX IN 3	22	I	X3,0	
AUX IN 2	23	I	X2,7	
AUX IN 1	24	I	X2,6	
AUX IN 8	25	I	X3,6	

NOTE: Input X3,7 IS USED INTERNALLY FOR MCR STATUS

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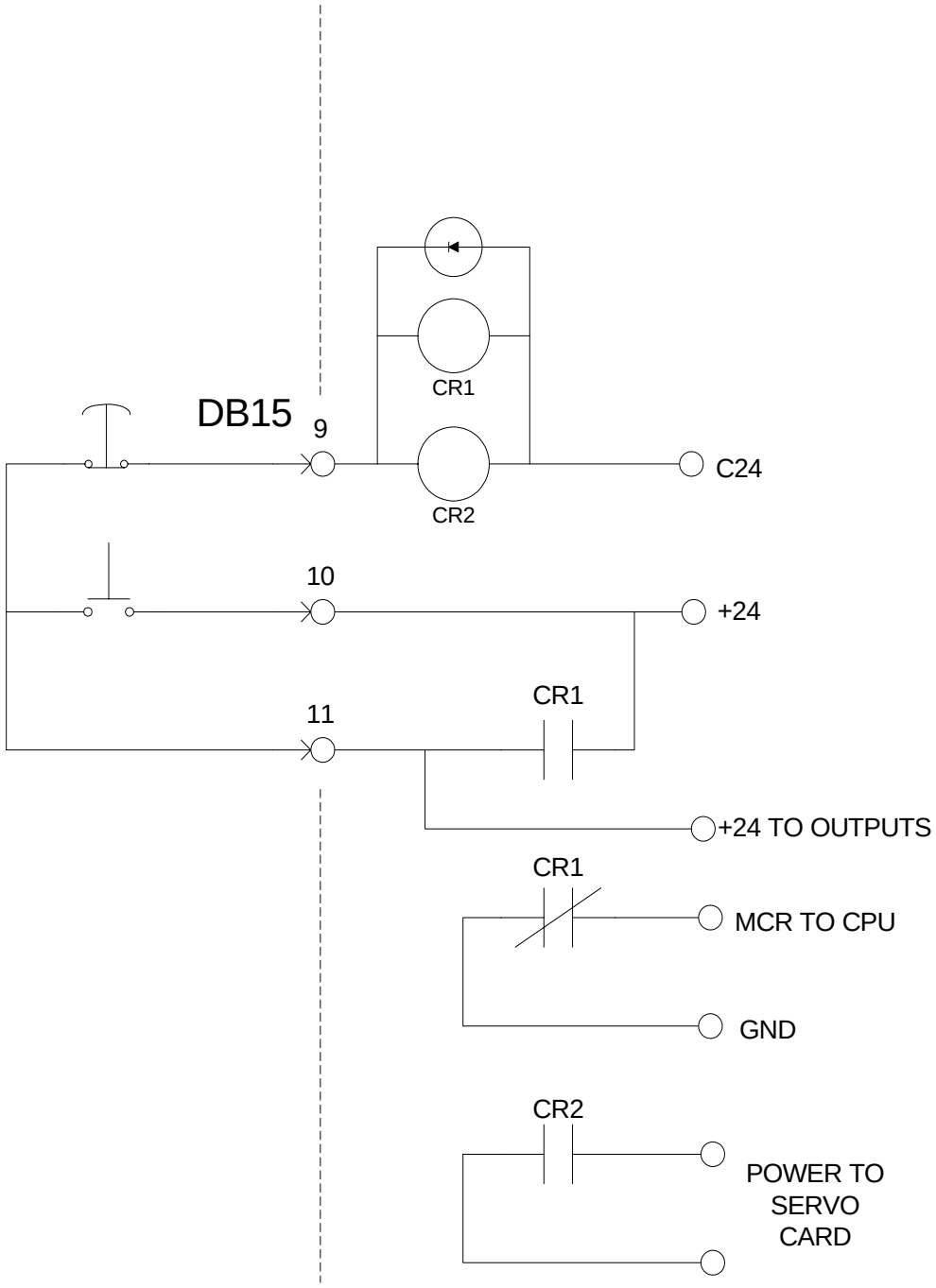
E-STOP Wiring (**J1 ONLY)**



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Display COMM. 8 Pin RJ **422 Touch Screen**	P7 PIN #		
RX+	1		
RX-	2		
Touch Sense (GND)	3		
Fault line O.C.	4		
GND	5		
GND	6		
TX+	7		
TX-	8		

Display COMM. 6 Pin RJ **232 Hand Held**	P7 PIN #		
TX	1		
RX	2		
GND	3		
GND	4		
+24	5		
+24	6		

COMM. 1 RS-232 DB9 Female	P8 PIN #		
NC	1		
RS232 XMIT	2		
RS232 RCV	3		
NC	4		
GND	5		
NC	6		
NC	7		
NC	8		
SHIELD	9		

COMM. 2 RS- 232 DB9 Female **Serial Plus Port**	P9 PIN #	INPUT/ OUTPUT	ADDRESS
+24	1		
RS232 XMIT	2		
RS232 RCV	3		
24C	4		
GND	5		
Aux Out	6	O	Y1,5
Aux In	7	I	X2,1
NC	8		
SHIELD	9		

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CONVEYOR ENCODER DB9 Male	P10 PIN #
2ENC A+	1
2ENC A-	2
2 ENC B+	3
2 ENC B-	4
+5 vdc	5
GND	6
Shield	7
NC	8
NC	9

Take-Up Amp 9 PIN LM3510		P13 PIN #	ADDRESS
Capacitor / Nuetral		1	
120VAC	Crydom output Y0,4	2	Y2,7
		3	
		4	
GND		5	
		6	
		7	
Capacitor		8	
		9	

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SECTION 4

CLEANING & MAINTENANCE

Troubleshooting	4-01
Fault Codes	4-02
Cleaning of the Print Head	4-03
Cleaning the Platen, Demand Plate and Rollers	4-03
Replacing the Print Head Power Fuse	4-03
Maintaining the Air Slide	4-04
Replacing the Power Fuse	4-05

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TROUBLESHOOTING GUIDE

If the system malfunctions, it is necessary to determine where the problem exists in a normal sequence of operation. The procedure of the unit is outlined in the left hand column of the table below to provide a systematic approach to troubleshooting.

Problem	Possible Cause	Corrective Action
Unit will not turn on.	A. Blown Main Fuse	Check main power fuse and replace if necessary as shown on page. Check printer fuse
Air system will not operate.	A. No air pressure. B. Plugged hose. C. Faulty valve.	Check air supply and filter. Fix or replace hose. Consult factory.
Tamp will not operate.	A. No air B. Plugged hose C. Faulty valve D. Cable E. No tamp duration F. Sticky cylinder	Check air supply and filter Fix or replace hose Consult factory Check connection Reference to page 2-11 Consult factory
Unit will not print or tamps will not print	A. Unit off line B. Incorrect label configuration C. No label format downloaded D. Wrong interface selected E. Interface cable F. Error on printer	Check printer cover limit switch Check software Check software Check mode 3 or dip switches Check connection Check printer manual
Take-up unit does not turn.	A. Motor not running B. Friction plate failure in clutch C. Mechanical failure in clutch	Consult Factory Consult Factory Consult Factory
Waste web tension to loose.	A. Clutch tension too low.	Adjust clutch as shown on page 2-10.
Waste web breaks or printing drifts on labels	A. Clutch adjusted to tight. B. Machine Webbed wrong. C. Low quality webbing. D. Friction plate failure in clutch. E. Mechanical failure in clutch.	Adjust clutch as shown on page 2-10. Re-web system as shown on page2-2. Consult label mfg. Consult factory. Consult factory.

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FAULT MESSAGES

DISPLAYED FAULT	FAULT	CORRECTIVE ACTION
Print Time Out	Printer failed to print or Control failed to receive a "End Prin Signal"	A. Printer Off Line B. No Label Formats Loaded C. Check Printer Interface Cable D. Printer mode incorrect
Tamp Down FLT	Head up limit switch failed to switch during the tamp cycle. Cylinder did not move off of reed switch.	A. Tamp Cylinder Is Not Up B. No Air C. Faulty Valve D. Flow Control Miss Adjusted E. Miss Adjusted Reed Switch F. Faulty Reed Switch G. Tamp duration too small H. Check programming of Tamp switch NOTE: Light on reed switch should be ON when cylinder is up.
Tamp Up FLT	Head up limit switch failed to switch during the tamp cycle. Cylinder did not return up.	A. Tamp Cylinder Is Not Up B. No Air C. Faulty Valve D. Flow Control Miss Adjusted E. Miss Adjusted Reed Switch F. Faulty Reed Switch G. Tamp duration too small H. Check programming of Tamp switch NOTE: Light on reed switch should be on when cylinder is up
PrePrint TRG FLT PrePrint Trigger FLT	Trigger signal was not received before timer expired. This FAULT will only occur if "PREPRINT" cycle is selected. (Variable Data)	A. Check photo eyes B. Check product delay
Ribbon Out	Printer is out of ribbon	Check printer for ribbon
Low Ribbon	Printer is low on ribbon	Check printer for ribbon
Label Out	Printer is out of ribbon	Check printer for label stock
Aux Tamp Flt	Head up limit switch failed to switch during the tamp cycle. NOTE: Light on reed switch should be ON when cylinder is home.	A. Tamp Cylinder Is Not home B. No Air C. Faulty Valve D. Flow Control Miss Adjusted E. Miss Adjusted Reed Switch F. Faulty Reed Switch G. Tamp duration too small

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CLEANING THE PRINT HEAD

Refer to section 3-2 of the enclosed SATO Operator's Manual for print head cleaning instructions or the appropriate section in the ZEBRA or DATAMAX Operator's Manual if so equipped.

CLEANING THE PLATEN, DEMAND PLATE, AND ROLLERS

Refer to section 3-3 of the enclosed SATO Operator's Manual for print head cleaning instructions or the appropriate section in the ZEBRA or DATAMAX Operator's Manual if so equipped.

REPLACING THE PRINT HEAD POWER FUSE

Refer to section 3-5 of the enclosed SATO Operator's Manual for print head cleaning instructions or the appropriate section in the ZEBRA or DATAMAX Operator's Manual if so equipped.

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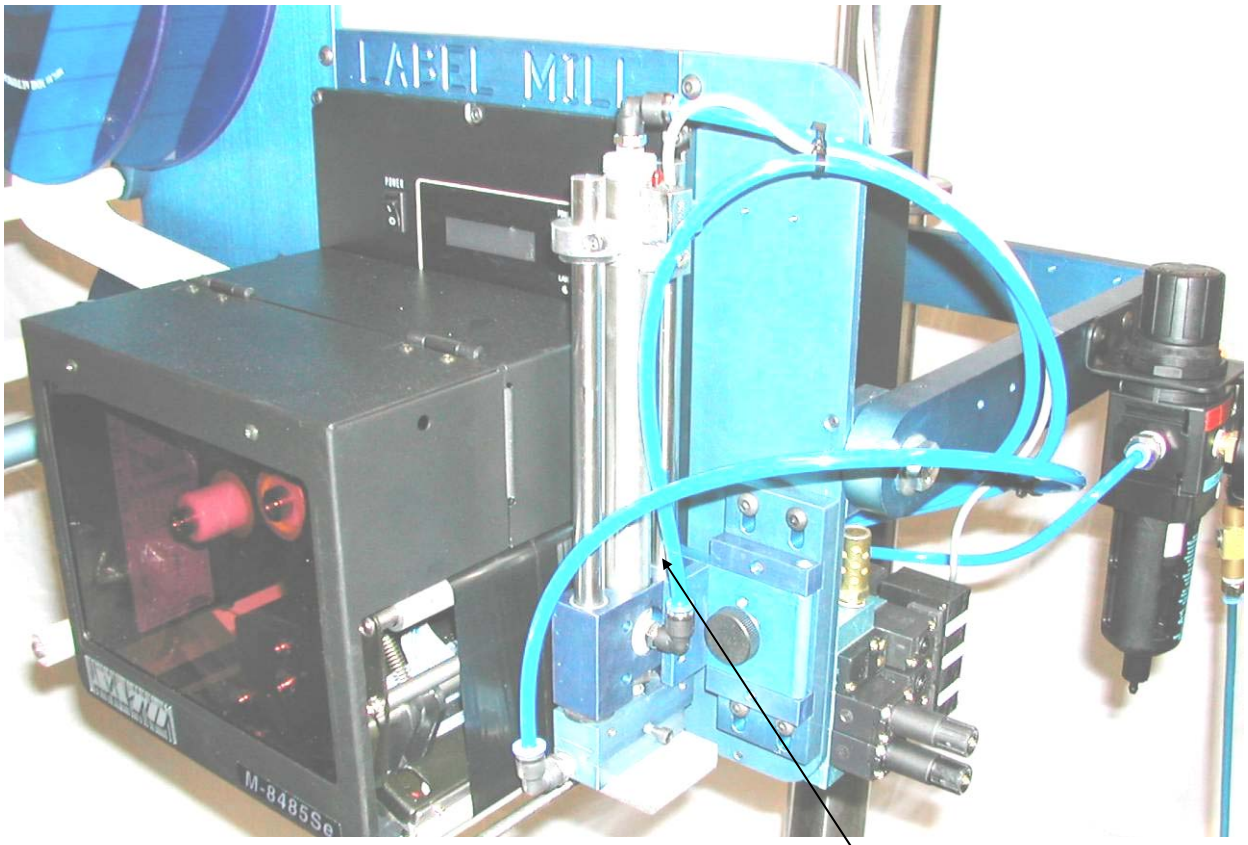
MAINTAINING THE AIR SLIDE

Very little maintenance is required to keep the Tamp Assembly's air slide in good working condition. To maintain the air slide, simply remove the air lines from the air slide and place 1-2 drops of any approved air motor oil into the air inlets at least once a month. 1-2 drops of oil is also required for the incoming air supply. WARNING!!! The main air supply must be shut off before you remove the air lines from the air slide.



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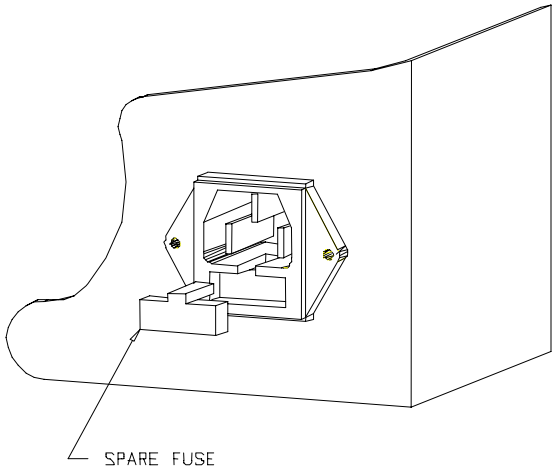
REPLACING THE MAIN POWER FUSE

The circuitry is protected from a current overload by GMA 10A a fast blow fuse. Should the applier fail to operate, the condition of this fuse should be checked. If the fuse is open, the cause of the overload condition must be determined and corrected prior to replacing the fuse. NEVER replace the fuse with one of a greater AMP rating. The specified rating has been selected to prevent damage and/or injury.

ACTIONS TO REPLACE THE MAIN FUSE

1. Set the main power switch to the OFF position.
2. Disconnect the AC power cable from the rear of the console.
3. Locate the fuse holder / power cord assembly.
4. Gently press down the fuse holder cover while pulling away from the console.
5. Replace with the spare fuse provided in the holder.



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